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“Uncertainty and Tax Enforcement:
A Case for Modest Fault-Based Penalties”

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Uncertainty and Tax Enforcement:  
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The conventional wisdom is that a deterrence theory of tax compliance indicates penalties for tax under-reporting should be significantly higher than existing penalties and automatic rather than fault based.¹ This is to compensate for a low audit rate and the correspondingly low probability of the government detecting under-reporting. I show in this article these bits of conventional wisdom are almost certainly wrong when it comes to under-paying uncertain taxes. This is because of an over-looked phenomenon.² Increasing the penalty for under-reporting to compensate for a low audit rate has a perverse effect on tax reporting when the tax due is uncertain. As a result of an asymmetry in the treatment of tax underpayments and overpayments – the former are scaled up by the penalty while the latter, at best, are refunded dollar for dollar with interest – taxpayers have an incentive to underpay by a large margin when the tax due is uncertain even at a penalty rate inverse of the audit rate. Counterbalancing this effect is the risk arising from the interaction of a penalty multiplier with uncertainty about the outcome on audit. A modest penalty multiplier creates significant risk if the outcome on audit is genuinely uncertain. Indeed a modest penalty multiplier creates significant risk

¹. Professor Berkeley Law School. Sections One and Two are extracted from a paper I presented at Berkeley Law School, Harvard Law School, Northwestern Law School, University of Pennsylvania School of Law, University of Texas School of Law, and University of Toronto Law School. James Hines suggested the algebraic explanation of the point in Section One. Chris Sancherio supplied me with an alternative approach to modeling risk aversion that inspired me to retool the model in Section Two in a way that is less sophisticated than Sancherio’s model but that I can comprehend intuitively. David Gamage gave invaluable on reframing the argument. I thank all for their comments and criticism.

². For example Daniel N. Shaviro, Disclosure and Civil Penalty Rules in the U.S. Legal Response to Corporate Tax Shelters (January 9, 2007), 229, 242, observes “While treating bad faith as a penalty prerequisite is dubious enough in theory, it begins to look even worse when we consider its institutional effects.”

Three recent papers address the general topic of optimal penalties when tax liability is uncertain but miss the key point that asymmetric treatment of overpayments and underpayments encourages taxpayers to take aggressive positions in the face of uncertainty. See Sarah B. Lawsky, Probably? Understanding Tax Law’s Uncertainty, 157 U. Pa. L. Rev. 1017 (2009); Kyle Logue, Optimal Tax Compliance and Penalties When the Law is Uncertain, 27 Va. Tax. Rev. 241 (2007); Daniel N. Shaviro, Disclosure and Civil Penalty Rules in the U.S. Legal Response to Corporate Tax Shelters (January 9, 2007). The large handful of empirical and experimental behavioral studies on the effect of legal uncertainty or ambiguity on taxpayer compliance are collected and discussed in note xxx infra.

I am unaware of the point being made in the literature on the effect of legal uncertainty on the design of sanctions outside the tax context. Richard Craswell and John Calfee, Deterrence and Uncertain Legal Standards, 2 J. Law Econ. & Org. 279 (1986), is an early treatment of the general problem.
even if a taxpayer reports a moderate position because of the risk the government will take an extreme position.

It is impossible to design a penalty structure to both deter risk neutral taxpayers from aggressively underpaying uncertain taxes but not make risk-averse taxpayers unduly cautious in transactions with uncertain tax consequences. For risk-averse taxpayers a modest fault-based mis-valuation penalty, perhaps even as low as 150% of a deficiency, can suffice to deter aggressive valuation of tax items of uncertain value. Such a modest fault-based penalty encourages risk neutral taxpayers to aggressively under-pay uncertain taxes. But even a penalty as high as a rate inverse to the expected probability of detection—e.g., a penalty multiplier of 20 to 50 times a deficiency—will not deter genuinely risk-neutral taxpayers from aggressively under-paying uncertain taxes. For them deterrence must be found in other levers, such as third-party penalties or enforcement strategies that make taxpayers expect more aggressive positions are likely to be audited.

I begin with legal uncertainty. Part I shows a penalty rate inverse of the detection rate does not deter aggressive under-reporting of an uncertain tax by a risk neutral taxpayer if under-payments and over-payments are treated asymmetrically. Part II uses a model of a deduction item of uncertain value to extend the point to valuation and to examine the risk created by the interaction of a penalty multiplier and uncertainty regarding the outcome on audit. Part III shows a fault-based penalty reduces risk for taxpayers who report a moderate value when the value of an item is uncertain while maintaining high levels of risk for taxpayers who report an extreme value. Part IV extends the model to consider the risk-reward structure of payoffs taxpayers face under existing law, which has quite low fault-based penalties. The model suggests uncertainty about the outcome on audit does not generate much additional risk under existing law other than the risk that would be present if the outcome on audit was known. I also look at data from the IRS’s Art Advisory Panel for insight on taxpayer behavior under existing penalties. The data suggests a significant number of taxpayers are quite aggressive in over-valuing artwork contributed to charity and under-valuing artwork for purposes of the estate tax. Part V returns to the issue of legal uncertainty and explains how the bimodality of outcomes on most legal questions alters the impact of a penalty. Part VI concludes.

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3 For reasons I will explain a somewhat higher penalty may be necessary for non-valuation items.
My analysis is in the framework of the deterrence model of tax compliance. More precisely, I examine how the penalty structure alters the expected return and risk to a taxpayer who is choosing how conservative or aggressive to be in paying an uncertain tax. The general thrust of my argument is to support on deterrence grounds a penalty structure that usually is justified on other grounds, such as fairness or as a way to encourage taxpayers not to think of compliance as a contest with the government. My analysis focuses on the direct financial benefits and costs of a decision—i.e., the tax paid (or saved), the refund if there is an over-payment, and the charge including a penalty if there is an under-payment. I do not incorporate other financial costs (e.g., legal fees in defending a position if it is challenged) and non-financial benefits and costs (e.g., the mixed psychological ramifications of a decision how to report an uncertain tax and the negative psychological ramifications of being audited). I treat audit as a simple event akin to having one’s exam graded in which the taxpayer does not participate and cannot influence the auditor’s decision. I use a simple model to make my points. I try to flag points in the analysis at which a richer account of human behavior would tend either to reinforce or to alter a conclusion. A richer account of human behavior generally tends to reinforce my major conclusions.


Recent empirical and experimental studies not included in these surveys that find that the perceived probability of detection and/or the penalty affect compliance include Govind S. Iyer, Philip M. J. Reckers, and Debra L. Sanders, Increasing Tax Compliance in Washington State: A Field Experiment, 63 National Tax J. 7 (2010), and Henrik J. Kleven, Martin B. Knudsen, Claus T. Kreiner, Soren Pedersen, and Emmanuel Saez, Unwilling or Unable to Cheat? Evidence from a Randomized Tax Audit Experiment in Denmark, NBER Working Paper No. 15769. Kleven et al is a field experiment using Dutch taxpayers that manipulated their experience with audit and the perceived prospect of audit. They find that most of the variation in accurately reporting self-reported income is explained by the experience and perceived prospect of audit and little is explained by social and cultural factors. The experiment does not test the effect of varying the perceived penalty rate.

Factors other than the prospect of detection and sanction that are thought to motivate compliance include habit, feelings of moral or political obligation, feelings of reciprocity, and trust or identification with government or the taxing authority. These have been grouped under the collective rubric “tax morale.” A particular worry is that punitive enforcement policies may undercut tax morale. In addition to the Raskolnikov and Doran articles the following articles advocate new approaches to tax administration that are designed to improve “tax morale”: Marjorie E. Kornhauser, A Tax Morale Approach to Compliance: Recommendations for the IRS, 8 Fla. Tax Rev. 599 (2007); Leandra Lederman, The Interplay Between Norms and Enforcement in Tax Compliance, 64 Ohio St. L.J. 1453 (2003); Susan Morse, Using Salience and Influence to Narrow the Tax Gap, Loyola U. Chi. L.J. 483 (2009)(focusing on small business under-reporting of cash income); Dennis J. Ventry, Jr., Cooperative Tax Regulation, 41 Conn. L. Rev. 431 (2008).
A set of difficult questions lurk in the background of this article. I assume it is desirable for a taxpayer to act moderately in the amount of an uncertain tax they decide to pay and in the effort they expend in making this decision. The value of moderation is not self-evident on either dimension. The argument for moderation is clearest when a taxpayer is asked to place a value on an income or deduction item of uncertain value. While a middle value in the range of possible values is not the “correct” value—my premise is there is no correct value—it is desirable that taxpayers as a group report middle values because a penalty structure biasing valuation in either direction distorts primary behavior. For example, there is good evidence employees sometimes choose compensation in the form of non-publicly traded stock over cash compensation because they know they can minimize taxes by under-valuing non-publicly traded stock. In addition to the revenue loss this behavior may distort contract structure and increase planning costs. The value of moderation is less clear when it comes to the effort a taxpayer expended in deciding what tax to pay. Presumably there is some social value in a taxpayer making an effort to ascertain the law and the facts in order to determine what tax to pay when the effort reveals an answer that is likely to be sustained on audit. Whatever this value may be, an effort to predict an outcome on audit has diminishing social value, and at some point has no social value, when the effort yields diminishing returns in the form of increased confidence a position will be sustained. As a taxpayer begins to expect their tax liability is irreducibly uncertain this point of diminishing returns is reached.

I. Legal uncertainty and the effect of asymmetric treatment of underpayments and overpayments

Assume a taxpayer decides whether to pay tax $t$. A taxpayer expects if he fails to pay $t$ the government will detect his failure to pay with a probability of $p$. Putting to the side such things as moral compulsion, reputation, and risk aversion, and assuming a taxpayer chooses whichever course of action has the lowest expected cost, a taxpayer will never pay $t$ if $p<1$ and the only consequence of detection is that he will be made to pay $t$ for

1) $t > tp$.

A standard theoretical solution is to increase $t$ by the inverse of the probability of detection, which makes a taxpayer indifferent between paying and not paying $t$ for

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5. The point that a penalty should be scaled by the inverse of the probability of detecting conduct that one wants to deter is commonplace in the literature on deterrence. Michael Allingham & Agnar Sandmo, Income Tax Evasion: A Theoretical Analysis, 1 J. Pub. Econ. 323 (1972), extend the general point to tax underpayments. They do not address the separate issue of the optimal level of deterrence of tax underpayments and do not recommend an inverse penalty for tax underpayments. Extensions of the core point account for risk aversion (indicating a lower sanction) and enforcement costs (indicating a sanction with a base higher than the social cost of the conduct to be deterred). A standard criticism of an inverse penalty is that it would be unacceptably high at plausible audit rates. A standard criticism of the model is that it under-predicts compliance under existing audit and penalty rates. Agnar Sandmo, The Theory of Tax Evasion: A Retrospective View, 58 National Tax Journal 643 (2005), covers much of this. He
2) \( t = tp(1/p) \).

Introduce a possibility a taxpayer does not actually owe tax \( t \). Define this as \( a \), where \( a > 0 \). Retain a probability of detection of \( p \) and an inverse penalty if a taxpayer does not pay \( t \) of \( 1/p \). The penalty applies if a taxpayer does not pay \( t \), the government detects and challenges the failure to pay \( t \), and the government determines \( t \) actually is owed. If a taxpayer does pay \( t \), then there is a probability of \( p \) the government will review the item and a probability of \( a \) the government will refund \( t \), having determined \( t \) was not owed. A taxpayer will decline to pay the tax even with an inverse penalty. For any values of \( a > 0 \) and \( p < 1 \) it is the case

3) \( t - tpa > tp(1-a)(1/p) \).

The left hand side of equation 3 is a taxpayer’s expected cost if he pays \( t \). This equals \( t \) minus \( tpa \), or the expected value of a refund of \( t \) discounted by the probability \( t \) will be audited and the government will determine it was not owed. The right hand side is the expected cost of not paying \( t \), including the probability that the government will determine a taxpayer was correct in not paying \( t \) or \( (1-a) \). Solving for 3) yields

4) \( 1 - pa > 1-a. \)

This holds whenever \( p < 1 \) and \( a > 0 \). Thus it holds for any probability of detection less than 1 and any chance \( t \) is not actually owed greater than 0. Equation 4) suggests a straightforward solution, which is to reward a taxpayer for an overpayment in the same ratio a taxpayer is penalized for an underpayment, i.e., multiple a refund by \( 1/p \).

5) \( 1 - pa(1/p) = 1-a. \)

The other solution is to increase the penalty by a factor \( x \) where \( x > 1 \). This will make a taxpayer indifferent between paying and not paying \( t \) if

6) \( (1-pa)/(1-a) = x. \)

An upshot of statement 6) is there is no general solution for \( x \)—i.e., the appropriate adjustment in the inverse penalty multiple—for \( x \) decreases with \( p \) and increases with \( a \). For items with a high probability a tax is not owed (i.e., as \( a \) approaches 1) and with a low probability of detection (i.e., as \( p \) approaches 0), \( x \) is significantly greater than 1. For items with a low probability a tax is not owed (i.e., as \( a \) approaches 0) or with a high probability of detection (i.e., as \( p \) approaches 1), \( x \) approaches 1, meaning a slight increase over an inverse penalty will suffice.

concludes that there are too many empirical unknowns to draw strong conclusions from the theoretical literature.
A crude example illustrates the points just made and adds a qualification. Imagine a law professor receives a $1,000 bottle of wine from an old classmate who is a partner in law firm the professor occasionally consults for. Whether the bottle is a gift for tax purposes is uncertain. Assume there is a one-in-four chance the wine will be classified as a gift (i.e., $a=.25$). Obviously, at a low detection and penalty rate the professor is better off treating it as a gift. But even at a penalty rate inverse of the detection rate she is better off treating it as a gift. Assume the detection rate ($p$) is .05 and the penalty increases the levy to 20 times the deficiency ($1/.05$). If she declares the wine as income, then the expected tax cost is $395 ($400 minus $5, or the $400 refund in the event the government classifies the wine as a gift discounted by the 5 percent probability of detection and the 25 percent probability the bottle will be classified as a gift). If she treats the wine as a gift, then the expected tax cost is $300 ($8,000 discounted by the 5 percent probability of audit and the 75 percent probability the wine will be classified as income).

The qualification is that an inverse penalty does collect the correct amount of tax on average. Assume 400 taxpayers in the same position as the professor all of whom make the same choice to not declare the bottle as income. Of the 400, 20 will be examined on the item and 15 will pay $8,000 each. This yields the correct amount of tax on average for the 400, or $300 per taxpayer, if one assumes that the correct amount of tax to pay when the classification of an item as income is uncertain is the amount of tax that would be owed if the item was income discounted by the probability that it is not income. This qualification may be important if a tax or charge is imposed for regulatory purposes. The phenomenon biases a taxpayer against paying an uncertain tax even if an inverse penalty is imposed. But an inverse penalty can create the appropriate incentives for the primary behavior regulated by an uncertain tax. Again this assumes that the appropriate incentive is the cost of the tax discounted by the probability that it is not owed. This also ignores risk aversion.

II. Uncertain value and risk aversion as a counterweight

In this Part I extend the analysis to a tax item of uncertain value. The case of valuation is important in its own right for problems of valuation are endemic in a tax that tries to account for items of income and expense without readily observable market prices. Valuation also is a good vehicle for illustrating how risk aversion can be a counterweight to the phenomenon described in Part I and for extending the analysis to penalty multipliers more generally. I will return to legal uncertainty in Part V. The bimodality of legal uncertainty may seem to make it an easier case than valuation. As you will see in Part V legal uncertainty actually presents a much more difficult analytical problem.

I use a simple model of a deduction item of speculative value, such as a gift of artwork to charity. A comparable income item would be compensation in the form of non-publicly traded stock. When I say an item is of speculative value I mean there is a wide range of values people might assign to the item if they were put to the decision. A
penalty-minded taxpayer will try to predict the value a tax auditor is likely to assign to the item in the event the item is audited.\footnote{My model may seem odd in assuming a taxpayer understands the value it selects from the probability distribution is fraught with uncertainty while the government assumes the value it selects from the same probability distribution is the correct value. This approach to framing decisions made under uncertainty is commonplace in litigation as well as other settings in which an actor tries to predict how a judge, jury, or some official will resolve an uncertain question of fact or law. In these settings the official judgment is treated as the truth of the matter though, of course, it is not.} A taxpayer should be able to specify with confidence a low and a high value he is certain will stand or fall on audit. Predictions of value between the two extremes will be probabilistic with a diminishing probability a value will stand on audit as the reported value increases. I try to capture this in a mathematically tractable way by specifying a probability distribution of values. This is not uncertainty in the technical sense of the term, which usually refers to a situation in which a decision-maker cannot assign probabilities to possible outcomes. Uncertainty in the technical sense adds the wrinkle of ambiguity aversion, meaning the additional disutility an individual attaches to an outcome because either the magnitude of a loss or the probability of the outcome is unknown in the sense that it can only be estimated.\footnote{Some comments on earlier drafts suggest the government can be expected (or, alternatively, should be constrained) to select the mean value. Under this assumption uncertainty (or risk) disappears from a taxpayer’s perspective. A taxpayer will never select a value below the mean value and his selection of a higher value will depend on the audit rate, the penalty, and his degree of risk aversion under a deterrence model. A related suggestion is that the government may be expected (or should be constrained) to select a value near the mean value. If this is the case, then a taxpayer will select a value based on the narrower probability distribution.}

For most of my simulations I generated 400 random numbers with a mean of approximately $100,000 and a standard deviation of approximately $25,000.\footnote{I used targets of $100,000 and $25,000 respectively. The minimum and maximum values are $22,154 $186,388.} A
taxpayer must select a value to report knowing she will receive a tax benefit of 40 cents on the dollar. A taxpayer knows the probability the reported value will be audited by the government. If the reported value is audited, then a taxpayer knows the government will choose a value from the 400 random numbers with the following consequences: (1) If the reported value is higher than the assessed value, then a taxpayer pays an amount equal to the deficiency multiplied by a penalty. (2) If the assessed value is higher than the reported value, then a taxpayer is refunded the amount of the over-payment.9

Figure 1 shows the expected return to a taxpayer of different reported values assuming a constant audit rate of 10 percent and that any deficiency found is multiplied by a factor of 10. The expected return is not adjusted for risk. A taxpayer maximizes her expected return by reporting a value significantly higher than the average of the possible values ($100,407). Indeed the return maximizing strategy is to claim the maximum possible value ($186,000). The expected return if a taxpayer claims the maximum possible value ($40,163) equals the average value ($100,407) times the tax rate (40 percent). If a taxpayer claims the maximum possible value, then the correct amount of tax is collected on an expected cost basis or on average. The taxpayer will have a nine-in-ten chance of reaping a tax savings of $74,400 and a one-in-ten chance of paying a penalty that on average is expected to $342,376. This is consistent with the analysis in Part I.

9 In reality a taxpayer is likely to have several chances to settle a disagreement regarding the value of an item on favorable terms before a final authoritative determination of value. A settlement option has an effect similar to conditioning the penalty on negligence or fraud combined with lowering the penalty rate. Offsetting the settlement option are whatever additional costs a taxpayer associates with being audited in addition to the penalty. These include legal and other fees in defending a position and associated non-financial costs (e.g., emotional disturbance) and whatever negative value a taxpayer attaches to the prospect of the audit leading to a broader inquiry into his tax returns. The option to appeal an adverse judgment has a similar effect if one assumes appeal is costly and that the initial value on audit is sticky in the sense that officials or bodies to whom an appeal is taken will give some weight to the initial value on audit. If appeal was costless and valuation was de novo, then the option to appeal would greatly reduce the risk of the auditor choosing an improbably low value.
In actuality an inverse penalty will induce most taxpayers to report a value much lower than the maximum possible value due to the risk entailed in claiming a high value. Figure 2 illustrates the key dynamics. It separates two dimensions of risk. One dimension is the average expected loss (or refund) if the position is audited. The other dimension is the standard deviation in the outcome on audit.\(^\text{10}\) Both risks increase exponentially as the reported value increases under a 10-to-1 penalty multiplier. Meanwhile under an inverse penalty as the reported value increases the expected return rises at a diminishing rate and eventually flattens well short of the maximum possible value. Even a mildly risk-averse taxpayer will be deterred by the decreasingly poor risk-reward tradeoff in reporting a higher value.

\(^{10}\) I do not try to aggregate these two dimensions of risk into a single dimension of risk nor do I try aggregate them with the expected return to show the risk adjusted expected return at different reported values. Why will become apparently shortly.
The exponential increase in risk on these two dimensions is a product of the interaction of a penalty multiplier with the probability distribution of possible values. The latter is a proxy for the uncertainty of the value of the deduction item. Consider first the expected loss (or refund) in the event a position is audited. At a low reported value the likely consequence of being audited is positive, reflecting the likelihood that the assessed value will exceed the reported value and a refund will be paid. The expected refund on audit decreases at an increasing rate as the reported value increases. The expected return on audit is zero at a reported value slightly below $78,500. This is well below the average value of the item—slightly more than $100,000—because while the likely outcome on audit is a refund at this reported value there is a risk the government will select a lower find, in which case the deficiency will be multiplied by 10. From this point there is an expected loss on average on audit that increases exponentially with the reported value. At any given point a $1 increase in reported value increases the expected loss on audit by $4 (40 cents taxed saved on the $1 multiplied by 10) discounted by the probability the assessed value will be lower than the reported value. As the reported value increases the probability the assessed value will be lower than the reported value nears
one or 100%. At the limit a $1 increase in the reported value saves 40 cents at taxes at an expected cost of $4.

The standard deviation in the outcome if audited also is a product of asymmetric treatment of underpayments and overpayments interacting with the wide range of possible values on audit. The asymmetry increases the variance in outcomes on audit ten-fold when the audited value is less than the reported value. As the reported value increases the standard deviation in the outcome on audit at first rises steeply as the probability the audited value will be less than the reported value increases. The standard deviation in the outcome on audit flattens as this probability approaches one or 100%.

Lowering the penalty rate reduces these risks in a straightforward way. Figure 3

Figure 3

compares the expected loss (or refund) and the standard deviation in the outcome on audit under a 10-to-1, 5-to-1, and 2.5-to-1 penalty multiplier with the same assumptions and model as Figures 1 and 2.

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For example, if a taxpayer chooses to report a value of $101,000 rather than $100,000, then not only is he exposing himself to the incremental risk of liability if the assessed value is between $100,000 and $101,000, but in addition he is increasing his liability in every outcome in which the assessed value is below $100,000 by $4,000. The chance that the assessed liability will be less than $100,000 is roughly 50% so the expected liability increases by $2,000.
These patterns follow from the dynamics described earlier. With a 5-to-1 penalty multiplier a $1 increase in the reported value results in a $2 increase in the expected liability if the reported value is audited discounted by the probability that the assessed value will be lower than the reported value. The expected loss on audit still increases steeply as the reported value increases, albeit at half the rate of a 10-to-1 penalty multiplier. Halving the penalty multiplier to 5-to-1 also halves the standard deviation in the return if audited. A 5-to-1 penalty multiplier still creates significant risk at a reported value near the mean of possible values and formidable risk at values significantly in excess of the mean of possible values.

Figure 3 shows a penalty multiplier of 2.5-to-1 or 5-to-1 creates significant risk for a taxpayer who reports a moderate value for an item of uncertain value. To underscore this point Figure 4 isolates the variance in the outcome on audit and the expected return on audit for reported values one standard deviation ($25,000) around the mean value ($100,000). At a penalty multiplier of 2.5-to-1 most of the additional risk attributable to uncertainty about the value of an item on audit lies in the variance in the outcome on audit. The expected return on audit is only slightly below what it would be if a taxpayer knows the value on audit will be $100,000. At a penalty multiplier of 5-to-1 uncertainty about the value of an item on audit creates a much larger variance in the outcome on audit and also significantly decreases the expected return on audit.

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12 If a taxpayer is certain the value of the item on audit will be $100,000, then there is no risk in reporting a value of this amount. For higher values there is an expected loss on audit of 40 cents on the dollar multiplied by the penalty rate. Assuming a 2.5-to-1 penalty multiplier, if a taxpayer reports a value of $120,000, then he or she faces a certain expected loss on audit of $20,000 if the value on audit is certain to be $100,000. Making the outcome on uncertain using the specified range of possible values increases the expected loss on audit by $1,400 to $121,400.
Figures 3 and 4 do not depict a taxpayer’s expected return from reporting a given value. Figure 2 shows if the penalty rate is the inverse of the audit rate, then the expected return flattens at reported values approximately one standard above the mean value. If the penalty rate is a fraction of the inverse of the audit rate, then this flattening effect largely disappears in the ranges of reported values depicted in Figures 3 and 4. Aggressive valuation is a good bet across the entire range in the sense that the expected return is positive and large even at an audit rate as high as 10 percent. For example, assuming a 10 percent audit rate and a 5-to-1 penalty, a $1,000 increase in the reported value from $120,000 to $121,000 saves $400 additional taxes at an expected additional cost of $167 (there is a $1,670 increase in the expected loss on audit discounted by a 10% chance of audit). But this is a very risky bet. The average expected loss on audit if a taxpayer claims a $121,000 value is $45,706. The standard deviation in the outcome on audit is $42,393, meaning a taxpayer has a slightly less than one-in-three chance of incurring a loss greater than $88,000 on audit. There is a five percent chance of a loss of $135,000 or more. The total tax savings from claiming a value of $121,000 is slightly more than $44,000.

Experience suggests many people will decline to make this sort of bet even if the risk of audit is significantly less than ten percent. Why people behave this way is a bit of a mystery. The behavior is difficult to explain using standard expected utility decision models of risk aversion for the loss, while large in relation to the payoff, is small in relation to a taxpayer’s likely wealth. Matthew Rabin and Richard Thaler suggest
“myopic loss aversion” better describes the relevant behavior. \footnote{Matthew Rabin and Richard Thaler, Anomalies: Risk Aversion, 15 Journal of Econ. Perspectives 219 (2001). There is a large literature in behavioral finance on whether myopic loss aversion might explain the equity premium, meaning the supra-normal returns to equity in recent history.}

“Loss aversion” refers to a human tendency to experience as especially painful outcomes worse than the perceived status quo. “Myopic” refers to a human tendency to focus myopically on the potential loss from taking a risky position in a particular transaction rather than the expected gain or loss from taking a more aggressive posture across a range of transactions that involve small or moderate losses. In the context of tax penalties, bolstering these tendencies is a tendency to over-weight very large, low probability losses. Rabin and Thaler argue the tendency to myopic loss aversion make humans susceptible to over-paying for protection from a risk of loss that is meaningful in the context of a discrete transaction but modest given an individual’s overall wealth and prospects. Familiar examples include purchasing an extended warranty on a major consumer durable and purchasing collision insurance when renting an automobile. From a seller’s perspective such deals are what Rabin and Thaler call “money pumps,” meaning such deals safely and predictably extract a surplus from myopically loss averse consumers.

Tax penalties may function like a money pump. \footnote{Findings that people are more inclined to under-report taxes to avoid making an additional tax payment with their return than they are inclined to under-report taxes to claim a refund are consistent with myopic loss aversion if one defines the baseline as a taxpayer’s cash position at the time of filing a return. Studies using the TCMP data found a strong correlation between whether a taxpayer was in an under- or over-withholding position and taxpayer compliance. See Otto Chang and Joseph J. Schultz, The Tax-Withholding Phenomena: Evidence from TCMP Data, 12 Journal of American Taxation Ass’n 88 (1990).} A taxpayer who focuses myopically on the immediate risk-reward tradeoff from not paying a tax, who over-weights the low probability risk of being audited, and who associates special pain with paying penalties or additions to tax, may be dissuaded from not paying a tax by a penalty that is less than the inverse of the audit rate. This effect probably is not unique to paying uncertain taxes in general or valuing uncertain tax items in particular. Indeed, Part IV will show that existing mis-valuation penalties are sufficiently low that uncertainty about the outcome on audit generates little additional risk. What this analysis shows is that a mis-valuation penalty multiplier in the range of 2.5 to 5-to-1 can interact with uncertainty about the outcome on audit to create significant additional risk over and above the risk that would be present if the outcome was uncertain. This additional risk will bear particularly heavily on the minds of taxpayers who tend to over-weight the risk of large, low-probability losses.

### III. The beauty of a fault-based penalty

This Part shows a fault-based penalty has the beautiful property of suppressing risk if a taxpayer reports a moderate value while rapidly scaling up the risk if a taxpayer reports an aggressive value. I begin with a point implicit in Figures 3 and 4. A penalty multiplier as low as 2.5-to-1 creates attention-getting risk even if a taxpayer does not aggressively value an item. At a 2.5 penalty rate a taxpayer will report a value of slightly
over $91,000 if he or she wants to expect to break-even on audit. This is on an item with a mean possible value of $100,000. But the large variance in the outcome on audit at this reported value (approximately $15,800) shows significant risk remains. This variance translates into a 1-in-8 chance of losing more than $25,000 on audit and a 1-in-4 chance of losing more than $8,000. This risk increases steeply if a taxpayer reports a value higher than $91,000. This raises the concern even a fairly low penalty multiplier will make taxpayers who are strongly risk-averse (or who are strongly inclined to myopic loss aversion) unduly cautious in transactions involving tax items with uncertain values.

A solution found in current law is to condition the mis-valuation penalty on there being a sufficiently large divergence between the reported value and the assessed value of an item. Section 6662 imposes a 20% penalty (i.e. there is a 1.2 penalty multiplier) in the case of a substantial valuation misstatement, which is defined as reporting a value for a deduction item 150% greater than the assessed value. The penalty increases to 40% (i.e. there is a 1.4 penalty multiplier) in the case of “gross valuation misstatement,” which is defined as reporting a value 200% greater than the assessed value. These often are described as fault-based penalties on the theory that when there is a large discrepancy between the reported value and the assessed value this probably is a result of the taxpayer taking an unreasonable, reckless, or dishonest position. I will use this terminology though it is a bit at odds with my assumption there is no true or correct value. I prefer to think of the triggers as a mechanism to minimize the risk to taxpayer who reports a mid-range value arising from the possibility the government will select an extremely low value.

The effect of making a penalty fault-based is largely what you would expect. A fault-based penalty decreases the expected loss across the range of reported values until one gets to reported values so high that there is a diminishingly small probability of an outcome in which the penalty does not apply. The beautiful feature of a fault-based penalty is that it suppresses the variance in the outcome on audit if a taxpayer reports a mid-range value but then steeply increases the variance in the outcome on audit at higher reported value. At very high reported values the variance in the outcome on audit actually is higher under a fault-based penalty than it is under an automatic penalty. This steep increase in risk is a product of a cliff effect in the structure of the penalty. If a reported value is over the line, then the penalty applies to an entire deficiency and not just that part of a deficiency attributable to the increment in the reported value that makes the position subject to the penalty.\footnote{To avoid the cliff effect a penalty conditioned on reported value being 150% or more of the assessed value would apply only to the amount of the deficiency attributable to reporting a value in excess of 150% of the assessed value. For example, assuming a 40% tax rate, if the reported value is $160 and the assessed value is $100, then the penalty would apply only to $4 of the $15 under-payment.}

\footnote{IRC § 6662. For a history of the penalty, which was put in this form in 1981, and a proposal to further simplify and rationalize the penalty structure, see Richard J. Wood, Accuracy Related Penalties: A Question of Value, 76 Iowa L. Rev. 309 (1991). There is a second respect in which the penalty is fault-based in addition to the trigger. Section 6659(e) gives the Secretary power to waive the penalty if the taxpayer can show “there was a reasonable basis for the valuation . . . claimed on the return and that such claim was made in good faith.”}
Figure Five illustrates. I retain most of the parameters of the model in Part Two, including the tax rate (40%) and the probability distribution of the value of the deduction item (a mean of approximately $100,000 with a standard deviation of approximately $25,000). Figure Five compares risks under a strict liability regime in which any deficiency is multiplied by 2.5 and a fault-based regime in which the penalty multiplier applies only if the reported value is 200% or more of the assessed value. Risks under the two regimes tend to converge under a lower trigger for a penalty, such as 150%. Adding an additional fraud or a recklessness penalty for extreme cases of mis-valuation has a small negative impact on the expected loss on audit and a somewhat larger impact increasing the variance in the outcome on audit for all but extremely aggressive reported values, where the additional penalty has a significant impact on both dimensions of risk.  

Varying the uncertainty of the value of the item has a small but meaningful impact on the expected loss (or refund) on audit and a much larger impact on the standard deviation of the outcome on audit in the directions you would expect.

The small impact on the expected loss on audit is a product of the interaction of the triggers with asset value probability distribution. If a negligence penalty applies when the reported value is 150% or more of the assessed value and a recklessness penalty applies when the reported value is 300% or more of the assessed value, then each $1 increase in the reported value increases the set of outcomes in which a negligence penalty will apply by 66 cents while it increases the set of outcomes in which the recklessness penalty applies by 33 cents. There is little risk of incurring the recklessness penalty except at quite high reported values. With the specified asset value probability distribution increasing the reported value from $120,000 to $130,000 increases the probability of the negligence penalty from 19.5% to 28.25% while it increases the probability of the recklessness penalty from 1.25% to just below 1.75%. At reported values as high as $200,000 the risk of incurring the recklessness penalty is slightly below 10% while the probability of the negligence penalty is over 90%. The effect on the variance on audit outcome is more pronounced because in the rare outcomes in which a recklessness penalty does apply it has a large impact, creating a long tail of negative outcomes.
From the perspective of a taxpayer who reports a mid-range value the effect of making the penalty fault-based is to limit outcomes in which the penalty is imposed to outcomes in which the government selects an improbably low value. This effect is somewhat muted because in outcomes in which the government selects an improbably low value the taxpayer still faces a very large penalty. A heightened standard for fault mitigates this effect somewhat by further reducing the probability of an outcome in which the penalty applies. Eliminating the cliff effect so a penalty applies only to the amount of the deficiency that is attributable to the portion of the reported value over the amount considered to be at fault mitigates this effect even more. But this undercuts an attractive property of a fault-based penalty produced by the cliff effect, which is the steep increase in the variance of audit outcomes at higher reported values.

IV. Are existing penalties for mis-valuation too low?

The existing penalty structure for mis-valuation combines fault-based penalties with a penalty rate for valuation misstatements that is significantly lower than the 2.5 multiplier assumed in Figure 5. There is a 1.2 penalty multiplier if the reported value of a deduction item is 150% or more of the assessed value and a non-cumulative 1.4 penalty multiplier if the reported value is 200% or more of the suppressed value. A very low penalty rate suppresses risk on the dimension of audit outcome, leaving the expected loss

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19 The actual penalty is somewhat higher once one accounts for the time value of money for interest is charged on the penalty from the due date of the return. IRC § 6601(e)(2)(B).
on audit the most salient risk. Figure 6 shows the risk structure assuming an asset with a probability distribution of values used in the previous simulations and existing penalties.

**Figure 6**

At low penalty rates uncertainty about the outcome on audit has no discernible impact on the expected loss (or refund) on audit. More concretely, using the deduction item and other assumptions modeled in Figure 6, if one assumes a taxpayer knows with certainty the value on audit will be the mean value (slightly more than $100,000) yields an expected loss (or refund) on audit that is approximately the same as the amount shown in Figure 6 for all reported values. Of course, the standard deviation in the outcome on audit goes to zero if the outcome on audit is certain. A corollary to the last point is uncertainty of audit outcome creates a variance in the outcome independent of the penalty rate. This variance flattens across the range of reported values at a lower penalty rate. If there is no penalty multiplier, then the variance is a constant equal to the standard deviation in the probability distribution of asset value discounted by the tax rate (here approximately $25,000 and 40 percent respectively).

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The expected loss on audit is slightly lower for values below the penalty thresholds (i.e., approximately $150,000 for the 1.2 penalty and $200,000 for the 1.4 penalty) and slightly higher for values above the penalty thresholds. The cliff effect at a penalty threshold results from substituting certainty regarding whether a penalty will apply at both sides of a threshold for a gradual increase in the probability of the penalty with an increase in reported value.
In sum the model indicates under existing penalties that uncertainty of audit outcome creates little risk in aggressive valuation over and above the risk in mis-valuing an item of known value in the dimension of the expected loss on audit. While there is additional risk captured by the standard deviation in audit outcome, aggressive valuation does not significantly alter this risk. One way to think about this is that uncertainty about audit outcome might deter a taxpayer from entering into a transaction involving valuation uncertainty, but once a taxpayer is in a position of having to value an item of uncertain value this risk will not deter a taxpayer from reporting an aggressive value because aggressive valuation little changes the risk.

So are existing penalties for mis-valuation too low? The model suggests the answer probably is yes except for people who are exceedingly risk-averse (or who are strongly inclined to myopic loss aversion). As for reality, there is a great deal of anecdotal evidence that taxpayers are aggressive in valuing uncertain tax items and in exploiting legal uncertainty. But this is anecdotal evidence and may be based on experience with the subset of taxpayers who are not very risk-averse. There also is a great deal of anecdotal evidence legal uncertainty weighs heavily on taxpayers in the form of taxpayer complaints about legal uncertainty. But often these complaints are loudest when the government is attempting to enforce uncertain standards in the face of evidence of widespread under-compliance. Often taxpayer interest groups oppose proposals to make the law more certain, suggesting at least those taxpayers who mobilize to influence tax law benefit from uncertainty.

There is a fair bit of evidence from contexts in which a tax liability is certain that many taxpayers comply for reasons other than the threat of sanction for non-compliance. But the factors other than sanctions principally thought to promote compliance—these include a preference for doing one’s duty, feelings of reciprocity, and habit—have ambiguous implications when the obligation to be acted upon is uncertain. There is a paucity of empirical data on how taxpayers behave in valuing uncertain tax

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21 William A. Drennan, Strict Liability and Tax Penalties, 62 Okla. L. Rev. 1, 17-19 (2009), presents some striking facts in making a case for an automatic penalty. He reports that in the seven year period ending in 2004 the IRS assessed the negligence penalty on average 672 times per year and that the penalty ended up being waived in 325 cases in which it had been assessed. In one year in which Drennan reports the IRS was particularly aggressive in seeking the negligence penalty, only 1-in-217,391 individual filers were subjected to the negligence penalty and only 1-in-2,076 individuals who were audited were subjected to the penalty.

22 An example is the recent protests by industry groups by the crackdown on businesses that misclassify employees as independent contractors. See Steven Greenhouse, U.S. Cracks Down on Contractors as Tax Dodge, New York Times (Feb. 17, 2010).

23 An example is the political opposition to the efforts by the Treasury to issue regulations implementing IRC § 385, which was enacted in 1969 and directed the Secretary “to prescribe such regulations as may be necessary or appropriate” to distinguish corporate debt and equity.

24 Leads into this literature may be found in note 3 supra.
item and paying uncertain taxes more generally.\textsuperscript{25} Little can be inferred about taxpayer behavior from data on the frequency and magnitude of deficiency assessments involving

\textsuperscript{25} The most recent data on taxpayer compliance from the National Research Program is summarized in Internal Revenue Service, Reducing the Tax Gap (August 2, 2007), and in Mark J. Mazur and Alan H. Plumley, Understanding the Tax Gap, 60 National Tax J. 569 (2007). The broad findings are consistent with the results of the Taxpayer Compliance Measurement Program (“TCMP”) two decades earlier. Both programs measure compliance by subjecting a large random sample of returns to thorough line item review. Most of the tax gap is due to under-reporting income (and not failure to file or pay) and the rate of under-reporting is much higher, above 50%, on items that are not subject to withholding and that have minimal or no third party information reporting. No doubt much of the under-reporting is on items in which the law is clear. In particular, much of it is failure to report cash income by small businesses. The report and the article do not break out or try to estimate the incidence of under-reporting for items in which the tax due is uncertain.

There is some empirical evidence that uncertainty of a tax due encourages noncompliance in the TCMP data. Steven Klepper and Daniel Nagin, The Anatomy of Tax Evasion, 5 J.L.Econ. & Org. 1 (1989), using a line by line analysis of 1982 TCMP data, find that noncompliance significantly increases with the ambiguity of an item. They include among ambiguous items line items that require valuation (such as non-cash charitable contributions) and items for which there was substantial legal ambiguity. They use as a measure of legal ambiguity the number of Revenue Rulings pertaining to an item in 1982-1984. A follow on paper, Steven Klepper, Mark Mazur, and Daniel Nagin, Expert Intermediaries and Legal Compliance: The Case of Tax Preparers, 34 J. Law & Econ. 205, 226 (1991), using the same data finds that use by a taxpayer of a paid preparer increases compliance on a return on unambiguous items and decreases compliance on ambiguous items.

There are a large handful of behavioral experiments and surveys that investigate the factors that influence taxpayer compliance with uncertain or ambiguous legal obligations. The most pertinent for my purposes is Paul J. Beck, Jon S. Davis, and Woon-Oh Jung, Experimental Evidence on Taxpayer Reporting Under Uncertainty, 66 The Accounting Review 535 (1991). They conduct an experiment with students with a design similar to my valuation model—subjects were asked to select a value to report for an income item knowing only that the government would select a value in a specified range. The experiment specified a high audit rate (40% to 90%) and a penalty multiplier of 1.2 or 3. Subjects reported a value for an income item slightly below the mean of possible value except at an audit rate of 90%, when they reported a value close to the highest possible value. Subjects reported a value near the lowest possible value with a 1.2 penalty multiplier. While the results are consistent with the model in this article if one assumes the subjects are risk-averse the structure of the experiment makes it difficult to draw conclusions from it.

Other studies while interesting do not address the behaviors that are the focus of this article. Dennis R. Schmidt, The prospects of taxpayer agreement with aggressive tax advice, 22 Journal of Economic Psychology 157 (2001), is a survey of US taxpayers posing hypothetical questions to test their willingness to follow aggressive tax advice checking background assumptions on such matters as the probability of detection and penalty and manipulating the context (whether taking the advice reduces the balance due or provides a refund) and the source of the advice (a CPA or not). Kristina Murphy, Aggressive tax planning: Differentiating those playing the game from those who don’t, 25 Journal of Economic Psychology 307 (2004), reports the results of a survey of Australian taxpayers, comparing the revealed “motivational posture” of the substantial minority of responders who stated a preference for a “creative account” and who reported they had hired an aggressive tax agent from the characteristics of the majority of responders who answered these questions in the negative. She finds the former are more likely to view tax filing as a game, “are more likely to see paying tax as a burden, are more likely to want an efficient tax system, and are more likely to place social distance between themselves and a tax authority.” Kaye J. Newberry, Philip M.J. Reckers, and Robert M. Wyndels, An examination of tax practitioner decisions: The role of preparer sanctions and framing effect associated with client condition, 14 Journal of
uncertain items because of selection bias. Extreme positions are more likely to be challenged. And government officials themselves may be biased in resolving uncertainty against a taxpayer once a case is in controversy.

One data set less infected by these problems is from the IRS’s Art Advisory Panel. The panel reviews artwork appraisals.\(^{26}\) The panel’s decisions are binding on the IRS and may be used against a taxpayer who contests a decision. Artwork comes to the panel in two ways. In a handful of cases it is because a taxpayer requests an appraisal, which is in a taxpayer’s power.\(^{27}\) Typically artwork is submitted to the panel for appraisal by an IRS agent. Importantly, agents are required to submit artwork to the panel for valuation in any case selected for audit involving artwork with a claimed value of $20,000 or more per item.\(^{28}\) This reduces selection bias for presumably a significant number of cases are selected for audit for reasons other than an agent’s belief the artwork is mis-valued by a taxpayer. In addition, agents often will lack the information or expertise to make even an educated guess on the value of artwork. The panel’s composition and procedures reduce the risk of bias by the government. The panel is composed of 25 art experts who serve without compensation. In addition, the panel does not know the tax effect of valuation for the members are not told whether an item was valued for estate and gift tax purposes or charitable contribution purposes. The panel reviews items sorted by artist or object type and not by case.

Tables One and Two report increases and decreases in the value of artwork recommended by the Panel in the years 2001-2004 and 2006-2008.\(^{29}\) Table One reports items valued for estate and gift tax purposes. Under-valuation is generally (but not always\(^{30}\)) in a taxpayer’s interest in this situation. Over the seven years, 47.5% of items were deemed undervalued. The recommended increases total 38.8% of the reported

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Economic Psychology 439 (1993), is a survey of tax professionals to assess their inclination to sign a return taking an aggressive position varying the preparer penalty and whether the client was an existing or new client.

\(^{26}\) Since 1984, taxpayers have been required to obtain a qualified appraisal to substantiate the value of property contributed to a charity when the property is worth more than $5,000. IRC § 170(f)(11)(C). The appraisal must be included with the return if the property is worth more than $500,000. When an estate has artwork worth in excess of $3,000 regulations require that an expert appraisal be included with the estate’s return. Reg. § 20.2031-6(b).

\(^{27}\) See Rev. Proc. 96-15. Such requests comprised 6 of 122 cases in 2003, 3 of 114 case in 2004, 4 of 105 cases in 2005, 7 of 124 cases in 2006, 1 of 131 cases in 2007, and 3 of 179 cases in 2008. I do no exclude the cases from the total because the panel does not breakout the results on this subset of cases.

\(^{28}\) See IRM 4.48.2 and IRM 8.18.1.3.

\(^{29}\) The numbers are taken from Art Advisory Panel, Annual Summary Report. The reports may be found at [http://www.irs.gov/individuals/article/0,,id=96804,00.html](http://www.irs.gov/individuals/article/0,,id=96804,00.html). Cases are total number of cases reviewed. Items are those for which review was concluded. 2005 is omitted because the statistical breakdown was not included with the report that year. The patterns in 2005 are consistent.

\(^{30}\) When an estate is not subject to the estate tax over-valuation is in the taxpayer’s interest because it establishes a higher basis in the property.
values of all reviewed items and 70.7% of the reported values of items for which an increase was recommended. Only 10.9% of items were deemed overvalued. The recommended decrease in value only was 3.5% of the reported value of all items though it was 35.4% of the reported values of items for which a decrease was recommended.

Table One: Panel review of art valued for estate and gift tax purposes

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
<th>Items</th>
<th>Increase</th>
<th>Decrease</th>
<th>Reported value: total (millions)</th>
<th>Reported value: increased items</th>
<th>Recommended increase</th>
<th>Reported value: decreased items</th>
<th>Recommended decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>83</td>
<td>623</td>
<td>210</td>
<td>88</td>
<td>$109.1</td>
<td>$67.8</td>
<td>$65.7</td>
<td>$14.9</td>
<td>$5.5</td>
</tr>
<tr>
<td>2002</td>
<td>86</td>
<td>459</td>
<td>158</td>
<td>91</td>
<td>$74.8</td>
<td>$28.1</td>
<td>$24.8</td>
<td>$20.2</td>
<td>$7.0</td>
</tr>
<tr>
<td>2003</td>
<td>118</td>
<td>558</td>
<td>171</td>
<td>108</td>
<td>$83.4</td>
<td>$38.2</td>
<td>$30.1</td>
<td>$17.5</td>
<td>$5.9</td>
</tr>
<tr>
<td>2004</td>
<td>107</td>
<td>741</td>
<td>322</td>
<td>99</td>
<td>$297.4</td>
<td>$130.3</td>
<td>$73.1</td>
<td>$36.2</td>
<td>$11.3</td>
</tr>
<tr>
<td>2006</td>
<td>114</td>
<td>1573</td>
<td>849</td>
<td>106</td>
<td>$211.3</td>
<td>$127.1</td>
<td>$121.2</td>
<td>$8.9</td>
<td>$3.4</td>
</tr>
<tr>
<td>2007</td>
<td>120</td>
<td>863</td>
<td>494</td>
<td>59</td>
<td>$246.3</td>
<td>$141.5</td>
<td>$82.3</td>
<td>$8.0</td>
<td>$2.8</td>
</tr>
<tr>
<td>2008</td>
<td>158</td>
<td>782</td>
<td>456</td>
<td>59</td>
<td>$110.0</td>
<td>$88.5</td>
<td>$42.1</td>
<td>$6.0</td>
<td>$3.5</td>
</tr>
<tr>
<td>Total</td>
<td>786</td>
<td>5599</td>
<td>2660</td>
<td>610</td>
<td>$1,132.3</td>
<td>$621.4</td>
<td>$439.2</td>
<td>$111.6</td>
<td>$39.5</td>
</tr>
</tbody>
</table>

Table Two reports items valued for purposes of claiming a charitable contribution deduction. Here over-valuation always is in a taxpayer’s interest. More than one third (37.4%) of the items were deemed over-valued. The recommended decreases total 23.4% of the reported values of all reviewed items and 48% of the reported values of items for which a decrease was recommended. Cases in which the panel found the taxpayer under-valued artwork contributed to charity were almost non-existent prior to 2007 (5 out of 350 items reviewed or 1.4% of all items), though the magnitude of the under valuation was quite large in this handful of cases (a 38.25% increase was recommended on average in the five cases). The patterns in 2007 and 2008 are notably different. Approximately 10% (28 of 287) items were found to be under-valued by the panel and the recommended increases were on average quite large relative to reported value. Indeed, in 2008 the dollar value of increases exceeded the dollar value of decreases.31

Table Two: Panel review of art valued for charitable contribution purposes

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31 An interesting question is whether this shift can be attributed to the enactment of § 6695A in 2006. The statute imposes a penalty on the appraiser equal to the lesser of 10 percent of the underpayment (but no lower than $1,000) or 125 percent of the fee paid for the appraisal if the claimed value of the property results in a substantial or gross valuation misstatement.
If taxpayers reported values near the mid-range of possible values, then we would expect the panel to recommend an equal number of downward and upward adjustments of equal magnitude. Instead recommended adjustments are disproportionately in a direction adverse to a taxpayer both in incidence and magnitude and by large margins. Viewed charitably, this is telling evidence that a significant number of taxpayers resolve doubts about the valuation of artwork in their own favor and by a large margin. But it is also striking that for well over half the items valued the panel recommended no adjustment or the panel recommended an adjustment in the taxpayer’s favor. And in cases in which there is an adjustment in the taxpayer’s favor the magnitude of the adjustment is quite large. A likely inference is that a significant number of taxpayers try to report fair values. The aggregation of the data makes it impossible to go beyond these observations. These patterns are consistent with other empirical evidence showing that while a large subset of taxpayers is inclined to exploit tax law uncertainty another large subset of taxpayers is not so inclined.

V. Legal Uncertainty

Valuation requires a taxpayer to select a value to report knowing there is a range of possible values on audit. Typically legal uncertainty is different in that the outcome

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32 It would be useful to breakout the recommended changes in item by individual item and to compare changes for items in a single case. If there was a strong positive correlation of changes in a case, then this would be very strong evidence of aggressive valuation by the taxpayer.

33 Legal uncertainty has several sources. A taxpayer (or her advisor) may be uncertain about relevant facts, they may be uncertain about the content of a rule or standard, or they may be uncertain about the application of a standard to the facts. When we say a point of tax law is legally uncertain we mean a
on a legal question is bimodal. A security may be classified either as debt or equity. An expense may be classified either as personal or as business related. The bimodality of outcomes on audit considerably simplifies the analysis of risk until one tries to understand the effect of making penalties for legal error fault-based. I take up legal uncertainty at the end because the valuation model provides a useful handle on this last very difficult problem.

Part I shows that because of the asymmetric treatment of under-payments and over-payments a taxpayer always is better off in expected value terms not paying a tax he may not owe no matter how small the probability the tax is not owed if the probability of audit is less than 1 and the penalty is no higher than the inverse of the audit rate. This ignores risk. The risk in taking an aggressive legal position is a straightforward function of the amount of the amount of tax at stake if a position is rejected, discounted by the audit rate and the probability the position will be sustained, and increased by the penalty rate. Figure 7 illustrates the basic relationships. It assumes a $10,000 expense that may or may be business related and a 40 percent tax rate. The horizontal access is the probability the expense is personal, which ranges from zero to one. I assume a 10% audit rate and a 10-to-1 penalty multiplier. Claiming the expense is business related has a positive expected payoff to a taxpayer so long as there is any chance the expense is business related. The outcome on audit is bimodal—either the taxpayer’s reporting position will be sustained or the taxpayer will lose $40,000. The expected payoff of claiming a business expense (the top line) diminishes with the probability of reversal on audit. As the probability of reversal on audit increases the average expected loss on audit (the lower line) increases tenfold at the rate of the penalty multiplier.
As with valuation an inverse penalty multiplier creates striking levels of risk even if a taxpayer claims a business expense only if the probability of the position being sustained on audit is 50% or greater. Assuming a 10-to-1 penalty multiplier and a 50% probability of being sustained, a taxpayer faces an average expected loss if he is audited of $20,000. More concretely, by claiming a business expense the taxpayer saves $4,000 in taxes but takes a 1-in-20 risk of having to pay $40,000. While this bet has a positive expected payoff (of $2,000) a taxpayer does not have to be very risk adverse (or much inclined to myopic loss aversion) to find the bet unpalatable. On the other hand, risk is a trivial deterrent under a very low audit rate and a low penalty. For example, if one assumes an audit rate of 2% and a penalty of 20% of a deficiency, then a taxpayer who claims a $10,000 business expense when there is only a small chance of the deduction being sustained on audit saves $4,000 in taxes while taking a 1-in-50 chance of having to pay $4,800 in the event of audit, discounted by whatever the small probability is of the deduction being sustained on audit.

Earlier I suggested a penalty as low as 150% of a deficiency (or a penalty rate of 2.5) might create sufficient levels of risk to deter aggressive valuation of items of uncertain value by taxpayers inclined to myopic loss aversion. The bimodality of legal outcomes means the same penalty rate generates less risk for a comparably extreme legal position. In the case of legal uncertainty the expected loss an audit simply is the amount of the taxes at stake, discounted by the probability of the taxpayer’s position being sustained, and then increased by the penalty. In the case of valuation the expected loss on audit increases exponentially with the aggressiveness of the reported value. The variance
in the outcome on audit also increases exponentially with the aggressiveness of the reported value. These differences are a product of the fact that in the case of valuation an increase in the reported value of a deduction item increases the magnitude of the deficiency and with it the size of the penalty in every outcome in which the government selects a lower value than the reported value along with the increase in the probability of an adverse outcome on audit. In the case of legal uncertainty the potential deficiency and so the potential size of the penalty is constant no matter how aggressive the position. The size of the penalty turns solely on the amount of taxes that hinge on the contested legal issue. An increase in the aggressiveness of a position only decreases the probability of a position being sustained.

Part IV shows that fault-based valuation penalties can minimize the risk to a taxpayer who reports a moderate value in the range of possible values while still generating significant risk for a taxpayer who reports an aggressive value. I used as an example of a fault-based penalty the rules in Section 6662 that condition the 20% and 40% penalties for over-valuation on the reported value being respectively 150% or 200% of the assessed value of the item in question. Section 6662 has comparable rules for erroneous legal positions that try to limit the 20% substantial understatement penalty to taxpayers who take aggressive positions. The standards differ depending on whether a position is taken in a tax avoidance transaction and whether a position is disclosed. The least-forgiving standard applies to a doubtful legal position taken in a tax avoidance transaction. A taxpayer is subject to the penalty unless the taxpayer reasonably believed the rejected position was “more likely than not” to be sustained on review. For an undisclosed position in non-tax avoidance transaction the penalty does not apply so long as the taxpayer had “substantial authority” for the rejected position. For a disclosed position in a non-tax avoidance transaction a taxpayer need only have “a reasonable basis” for the rejected position. The “substantial authority” and “reasonable basis” standards for a position are said to straddle the standard of a “realistic prospect of

34 IRC § 6664(d)(2)(C). For a brief period in 2007 it looked as if a return preparer would be subject to a penalty if they prepared a return with an incorrect position that did not satisfy the “more likely than not” standard absent disclosure. The standard for the return preparer penalty had been “realistic possibility of success.” 2007 Small Business Tax Act § 8246. The standard was loosened by legislation in 2008 to “substantial authority.” “More likely than not” remains the standard for the return preparer penalty in a tax avoidance transaction. See Notice 2009-5. Under Circular 230 a professional may provide a marketed opinion for a tax avoidance transaction only if the professional is able to reach a more likely than not conclusion on every significant federal tax issue raised by the transaction. 31 C.F.R. 10.35(c)(3)(iv).

35 IRC § 6662(d)(2)(B)(i). Reg. § 1.6662-4(d)(2) describes the standard as “less stringent than the more likely than not standard . . . but more stringent than the reasonable basis standard.” Report on Civil Tax Penalties, Commissioner’s Penalty Study, IRS, Doc 89-1586, at VIII-39, equates this with a 45% probability of success.

36 IRC § 6662(d)(2)(B)(ii)(II). The “reasonable basis” standard also is used in ABA Opinion [65]-314 to define the weakest position an attorney may ethically advise a client to take. Reg. § 1.6662-3(b)(3) explains “reasonable basis is a relatively high standard of tax reporting, that is, significantly higher than not frivolous or not patently improper. The reasonable basis standard is not satisfied by a return position that is merely arguable or that is merely a colorable claim.”
success,” which the Treasury equates with a 1-in-3 probability of success.  

The effect of these fault-based rules would be straightforward if legal uncertainty involved known objective probabilities, like flipping a coin or predicting the turn of a card. But legal uncertainty rarely is of this character. Legal predictions are themselves uncertain and subjective. This raises a problem that is at bottom psychological in character though some may think it an epistemological problem. The problem is embedded in my valuation model, which has a taxpayer choose a value to report knowing there is a range of possible values and then has the government choose a value that the government will treat as the correct value for purposes of assessing tax and penalties. The model assumes the taxpayer and the relevant government official will approach the same problem—valuing an item of uncertain value—in very different ways. The model assumes a taxpayer approaches valuation knowing there is no truth of the matter while a government official treats his or her assessment as the truth of the matter. Perhaps taxpayers and government officials approach valuation in just this way. The different approaches are consistent with their different positions, particularly if the government official does not worry about a superior official or body reversing his or her decision. But this is not inevitable. A cocksure taxpayer (or hired appraiser) may think his or her value is the truth of the matter. And a government official may recognize his or her valuation of an item is only his or her opinion on a matter on which reasonable people might disagree significantly.

A fault-based valuation penalty conditions the penalty on there being a sufficiently large discrepancy between the assessed value and the reported value. The logic of this is self-evident if one assumes the assessed value is correct and predictable by a taxpayer for a large variation in the value a taxpayer claims and the assessed value can be explained by a taxpayer knowingly or carelessly misstating the reported value. But there is logic in a fault-based valuation penalty even if one recognizes the assessed value represents no more than the government selection of a value within the range of possible values. As explained in Part III, a fault-based valuation penalty protects a taxpayer who selects a middle value in the range of possible values of a deduction item from the risk that the government will select an improbably low value.

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37 Prior to 2007 a tax return preparer was subject to penalty under § 6694 if an understatement is attributable to a position that does not have “a realistic possibility of success” unless the position is disclosed. This also is the standard under Circular 230 for the weakest position a tax professional may recommend be taken on a return without disclosure. “Some realistic prospect of success” is the standard in ABA Opinion 85-352 for the weakest position an attorney may ethically advise a client to take on a tax return. An ABA task force tasked with explaining how this differs from reasonable basis opined that “some realistic possibility of success” approached 33 percent while “some reasonable basis” might be satisfied by a 5 to 10 percent probability of a position being sustained. ABA Special Task Force Report on Formal Opinion 85-352, reprinted in 39 Tax Lawyer 639 (1986). AICPA Statement No. 1 adopts the same standard for CPAs and makes similar ordinal comparisons with other standards but does not translate the standard into a probabilistic prediction.

Fault-based penalties for legal error cannot directly function in this way because of the bimodal nature of most legal questions. Either the government does or does not agree with the taxpayer on a legal point. Disagreement is not expressed in shades. The existing fault-based penalties for legal error try to finesse this problem by asking the relevant government official(s) to make a second order determination of what someone in the taxpayer’s position ought to have predicted to be the probability of success on the legal point. Again the effects of this would be straightforward if legal uncertainty involved known objective probabilities. But it does not. A taxpayer (or more likely a tax advisor) who is tasked with assessing the likelihood of a penalty applying to a position must make two probability assessments—first the likelihood the relevant government official(s) will reject the taxpayer’s position and second the likelihood the relevant government official(s) will determine the taxpayer’s reporting position does not satisfy the relevant standard for probability of success. The second order assessment does not follow straightforwardly from the first. In particular, a taxpayer will worry the relevant official in making the second order determination will over-estimate the probability his or her judgment is correct on the first order determination. It is common for people to assume their own judgment on a controvertible issue is correct or the truth of the matter and to attribute a different judgment by another to biases on the part of the other such as self-interest. When a government official rejects a taxpayer’s legal position it is easy for the official to assume their legal analysis is correct and the taxpayer’s analysis is biased by the taxpayer’s financial interest.

The “more likely than not” standard is criticized for inviting just this sort of bias. A 90% predicted probability of being affirmed on a legal question does not equate with a zero chance of a penalty for there is a significant risk that in the 1-in-10 case in which an official resolves the legal issue against the taxpayer the official also will conclude the taxpayer should have predicted this outcome absent an intervening change of facts or law. I will call this a false positive, referring to a case in which a taxpayer takes a position they reasonably believe has adequate grounds, an official rejects the position, and the official applies the penalty mistakenly concluding the taxpayer did not have

39 The second order prediction may also differ from the first if the relevant official is expected to evaluate the quality of a taxpayer’s prediction of success based on a set of information that differs in a material respect from the set of information that is considered by the official in evaluating the taxpayer’s legal position.


41 The “more likely than not” standard tends to collapse into strict liability—i.e., the penalty follows automatically once a legal position is rejected—if one assumes officials will always think their own analysis is more likely than not correct. The two do not quite collapse even under this assumption for a taxpayer may avoid the penalty if they can point to some excusable difference between the facts or law on which their reporting position was based and the facts and law on which the official’s decision was based to explain the different conclusions.
adequate grounds for the position. The risk of a false positive is diminished by a more forgiving standard, such as “reasonable basis,” but a risk remains. To put it concretely, an advisor may worry that even if she concludes it is very likely a position will be sustained on the review there is a risk that an official will take a different view of the law or facts and that the official will obstinately believe their view is the only plausible view. Whatever the standard of fault the risk of a false positive presumably diminishes as the expected probability a position will be rejected approaches zero. The risk never goes to zero so long as there is a chance of a cocksure official who will assume the inevitability of their own conclusion no matter how idiosyncratic that conclusion may be.

The more forgiving standards of fault may encourage a different mindset conducive to false negatives. In an extreme form this mindset assumes good faith on the part of a taxpayer (or more likely their advisor) and couples this with the view a penalty is merited only if the official concludes no reasonable person in the advisor’s position could possibly have thought the legal position met the relevant standard for probability of success. If an official is expected to be of this mindset, then an advisor will expect there is little risk of a penalty applying so long as the advisor genuinely believes a legal position meets the relevant standard for probability of success notwithstanding the risk that the advisor herself over-estimates the probability of success. Indeed, an advisor might think there is a fair chance of avoiding the penalty even if her personal evaluation of a position is that it does not satisfy the relevant standard. I think both outcomes can fairly be described as false negatives. Whatever the standard of fault the risk of a false negative presumably approaches zero as the probability a position will be reversed approaches 1 but never goes to zero so long as there is a chance of a gullible official who will assume good faith on the taxpayer’s part no matter how strained the legal argument for a position.

The upshot is that the expected loss on audit will not increase linearly with the riskiness of a legal position under a fault-based penalty. If legal risk involved known objective probabilities, then the expected loss on audit would rise linearly with a jump in the expected loss at whatever probability defines the minimally adequate basis for a reporting position. Introducing uncertainty and the possibility of cross-cutting psychological biases generates an expected loss on audit something like that depicted in Figure 8 under a forgiving standard of fault, such as a reasonable basis standard. The straight-line is the expected loss on audit with an automatic penalty. It is a direct function of the tax at stake, the probability of reversal, and the penalty. The curved line shows how a fault based penalty with a forgiving standard might alter the expected loss on audit. The expected loss on audit always is less than it would be under an automatic penalty but the difference diminishes as the probability a position will be reversed approaches 1. The inflection point depends on the standard of fault and one’s

42 William A. Drennan, Strict Liability and Tax Penalties, 62 Ok. L. Rev. 1, 19-20 (2009), accuses judges of having this mindset. He observes judges often decline to impose penalties that are sought by the government if a “transaction was completed; the law was unsettled; the issue was ‘novel’; the taxpayer position was not ‘clearly erroneous’; the taxpayer’s position was ‘reasonably debatable’; and at least five other judicially created excuses.”
assumptions about the pattern of official bias in evaluating the bona fides of legal analysis with which the official disagrees. A less forgiving standard of fault, such as more likely than not, will move the infection point to the left.

Like a fault-based penalty for mis-valuation, a fault-based penalty for legal error suppress the risk created by legal uncertainty so long as a taxpayer takes a conservative position while steeply increasing risk at some point as a position becomes more aggressive. A fault-based penalty for legal error generally will generate less risk than a comparable fault-based penalty for mis-valuation because of the bi-modality of the decision whether or not the penalty applies. Under a fault-based penalty for legal error the risk lies almost entirely in the dimension of the expected loss on audit. There is not that same dramatic increase in risk on the dimension of the variance in audit outcome as a position becomes more aggressive.

VI. Conclusion and caveats

The major conclusions of this article are as follows. (1) At a sufficiently high penalty rate there is a strong case for fault-based penalties for mis-valuation of items of uncertain value and for legal error because of the risk created by the interaction of a penalty with uncertainty about the outcome on audit. (2) This effect is not significant under existing penalties but it becomes significant at fairly modest penalty rates, particularly in the case of a mis-valuation penalty. (3) A fault-based penalty in what
may be the politically feasible range, such as on the order of magnitude of 150% of a deficiency resulting from mis-valuation, can create significant risk for taxpayers who take an aggressive position on an uncertain tax without creating significant risk for taxpayers who take moderate or conservative positions. (4) Even an automatic penalty as high as the inverse of the audit rate will not deter a risk-neutral (or risk-preferring) taxpayer from taking an aggressive position on an uncertain item because of the asymmetric treatment of over-payments and under-payments. Quite a few taxpayers probably are sufficiently insensitive to risk (or able to overcome a tendency to myopic loss aversion) that penalties in the politically feasible range will not deter them from aggressively under-paying an uncertain tax.

The impact of a penalty depends on aspects of human psychology in which people probably vary significantly and that have somewhat mysterious dynamics. A penalty along the lines I propose is an effective deterrent to aggressive under-payment of uncertain taxes only to the extent a taxpayer exhibits risk aversion, myopic loss aversion, or related psychological tendencies. It is easy to tell a story in which a relatively low fault-based penalty strikes the appropriate balance if we assume a taxpayer who over-weights losses, particularly extreme losses with very low probabilities, and who focuses on the risk and rewards of taking an aggressive position in the specific instance. In particular, the additional risk created by a low mis-valuation penalty largely lies in the variance in the outcome on audit. This risk will be salient only for taxpayers who look beyond the average or likely outcome on audit when they think about what evil may befall them should they report an aggressive value and who worry about the worst possible outcomes on audit.

I have assumed that in valuing an item of uncertain value or resolving a controvertible legal issue the government makes a choice independent of a taxpayer’s influence. Once a reporting position is questioned by the government a taxpayer may influence the probability of an adverse decision in a variety of ways. These include presenting evidence and arguments in support of a position to the relevant official, appealing a decision to a superior official or body, and settling in lieu of appeal. While these actions are costly they mitigate somewhat the risk of an adverse outcome, particularly an outcome that is a consequence of an official taking a position that is an outlier, if we assume an outlier decision is more likely to be altered in a direction in the taxpayer’s favor. If we assume a taxpayer will intervene only if the expected return from intervention exceeds the expected cost, without adjusting for risk, then the general direction of the effect of giving a taxpayer an option to intervene is straightforward. By definition having the option will reduce the average expected loss on audit. It also will reduce the variance in the outcome on audit if an outlier decision is more likely to be reversed. If we assume a taxpayer will intervene if the risk-adjusted return justifies the cost of intervention, then having the option to intervene may increase the average expected loss on audit while reducing the variance in the outcome on audit.

Finally nothing I have said bears on the question of how the law ought to respond to under-payment of an uncertain tax by someone who tries to take a fair position in the face of uncertainty because he or she is touched by the better angels of our nature and who is not driven to do so by the prospect of a penalty for underpaying. My hunch is that
a low fault-based penalty is appropriate for such people for the same reason it is appropriate for taxpayers who are risk-averse. It gives people some comfort they are unlikely to face a penalty so long as they make a reasonable effort to fairly determine the tax they owe.