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Uncertainty and Tax Enforcement: A Case for Moderate Fault-Based Penalties

MARK P. GERGEN*

I. INTRODUCTION

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 that this conventional wisdom is almost certainly wrong when it comes to underpaying uncertain taxes. This is because of an overlooked 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

* Professor of Law, U.C. Berkeley School of Law. Parts I and II 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. I presented this version of the Article to the Norcal Tax Roundtable and at Columbia Law School. James Hines suggested the algebraic explanation of the point in Part II. Chris Sanchirico supplied me with an alternative approach to modeling risk aversion that inspired me to retool the model in Part III. David Gamage gave invaluable advice on reframing the argument. I thank all for their comments and criticism.

¹ See, e.g., Daniel Shaviro, Disclosure and Civil Penalty Rules in the U.S. Legal Response to Corporate Tax Shelters, in Tax and Corporate Governance 229, 242 (Wolfgang Schön ed., 2008) (“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.”).

² Three recent articles address the general topic of optimal penalties when a 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 D. Logue, Optimal Tax Compliance and Penalties When the Law Is Uncertain, 27 Va. Tax Rev. 241 (2007); Shaviro, note 1. The large number of empirical and experimental behavioral studies on the effect of legal uncertainty or ambiguity on taxpayer compliance are collected and discussed in Part V. See note 30.

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. For an early treatment of the general problem, see Richard Craswell & John E. Calfee, Deterrence and Uncertain Legal Standards, 2 J.L. Econ. & Org. 279 (1986).
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 that is inverse to 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 moderate penalty multiplier on the order of 2.5 to 1 or 3 to 1 creates significant risk if the outcome on audit is genuinely uncertain. Indeed a moderate penalty multiplier creates significant risk even if a taxpayer takes a reporting position that has an even chance of being sustained 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. A risk-averse taxpayer can be sufficiently deterred from aggressively misvaluing a tax item by a penalty multiplier of 2.5 to 1 (that is, a $10 tax deficiency triggers a $25 total liability). Making the penalty fault-based has the desirable effect of diminishing the risk of reporting a value in the midrange of possible values while preserving the risk in aggressive valuation. This same penalty structure encourages risk-neutral taxpayers to aggressively underpay uncertain taxes. But even a penalty as high as a rate inverse to the expected probability of detection—for example, a penalty multiplier of twenty to fifty times a deficiency—will not deter genuinely risk-neutral taxpayers from aggressively underpaying 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 II shows a penalty rate that is inverse of the detection rate does not deter aggressive under-reporting of an uncertain tax by a risk-neutral taxpayer if underpayments and overpayments are treated asymmetrically. Part III 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 IV shows a fault-based penalty reduces risk if taxpayers report a mid-range value for an item of uncertain value while maintaining high levels of risk if

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3 For reasons I explain in Part VI, a somewhat higher penalty may be necessary for nonvaluation items.

4 The analysis in this Article assumes a constant audit rate no matter how aggressive a reporting position. While this is patently unrealistic, it helps to underscore an important finding. An increase in the penalty rate alone will not deter aggressive reporting by risk-neutral taxpayers at a penalty rate that is equal to or less than the inverse of the probability that the government will review an uncertain item.
taxpayers report an extreme value. Part V extends the model to consider the risk-reward structure of payoffs facing taxpayers under the low fault-based penalties of existing law. The model suggests uncertainty about the outcome on audit does not generate much additional risk other than the risk that would be present if the outcome on audit was known. I also look at data from the IRS Art Advisory Panel for insight on taxpayer behavior under existing law. The data suggests a significant number of taxpayers are quite aggressive in overvaluing artwork contributed to charity and undervaluing artwork for purposes of the estate tax. Part VI 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 VII concludes.

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 gen-

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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 & Debra L. Sanders, Increasing Tax Compliance in Washington State: A Field Experiment, 63 Nat'l Tax J. 7 (2010); Henrik J. Kleven, Martin B. Knudsen, Claus T. Kreiner, Soren Pedersen & Emmanuel Saez, Unwilling or Unable to Cheat? Evidence from a Randomized Tax Audit Experiment in Denmark (NBER, Working Paper No. 15769, 2010), available at www.nber.org/papers/w15769. Kleven et al., supra, is a field experiment using Danish 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 with audit and perceived prospect of audit and little is explained by social and cultural factors. Id. at 20-22. The experiment does not test the effect of varying the perceived penalty rate. See id. at 12-14 (describing the experimental design and data).

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." One worry is that punitive enforcement policies may undercut tax morale. Several articles advocate new approaches to tax administration that are designed to improve tax morale. E.g., Doran, supra, at 145-60; Marjorie E. Kornhauser, A Tax Morale Approach to Compliance: Recommendations for the IRS, 8 Fla. Tax Rev. 599, 626-40 (2007); Leandra Lederman, The Interplay Between Norms and Enforcement in Tax Compliance, 64 Ohio St. L.J. 1453 (2003); Susan Cleary Morse, Using Salience and Influence to Narrow the Tax Gap, 40 Loy. U. Chi. L.J. 483 (2009) (focusing on underreporting of cash income by small businesses and the self-employed); Raskolnikov, supra; Dennis J. Ventry, Jr., Cooperative Tax Regulation, 41 Conn. L. Rev. 431 (2008).
eral thrust of my argument is to support on deterrence grounds a penal-
ty 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—that is, the tax paid (or
saved), the refund if there is an overpayment, and the charge includ-
ing a penalty if there is an underpayment. I do not incorporate other
financial costs (for example, legal fees in defending a position if it is
challenged) and nonfinancial benefits and costs (for example, the
mixed psychological ramifications of a decision how to report an un-
certain tax and the negative psychological ramifications of being au-
dited). I treat audit as a simple event akin to having one’s exam
graded in which the taxpayer does not participate and cannot influ-
ence the auditor’s decision. I use a simple model to make my points.
I try to flag points in the analysis where a richer account of human
behavior tends to reinforce or to alter a conclusion. A richer account
of human behavior generally tends to reinforce my major conclusions.

A set of difficult questions lies in the background of my argument.
I assume it is desirable for a taxpayer to act moderately in the amount
of an uncertain tax he decides to pay and in the effort he expends 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
undervaluing 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 expends 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 dimin-
ishing 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. When a taxpayer begins to expect his tax
liability is irreducibly uncertain, this point of diminishing returns is
reached, if not before.
II. 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 \( p \).\(^6\) Ignoring 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,\(^7\) which makes a taxpayer indifferent between paying and not paying \( t \) for

\[
(2) \ t = tp(1/p).
\]

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

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\(^6\) My model assumes \( p \) is an endogenous variable to which the government essentially precommits. Michael J. Graetz, Jennifer F. Reinganum & Louis L. Wilde, The Tax Compliance Game: Toward an Interactive Theory of Law Enforcement, 2 J.L. Econ. & Org. 1, 9-15 (1986), models tax compliance assuming taxpayers expect the government to adjust its audit strategy to maximize revenues based on the expected pattern of noncompliance by taxpayers. Their model produces some strikingly counterintuitive predictions, including a prediction that if taxpayers anticipate the level of auditing is not budget constrained, an increase in the percentage of strategic noncompliers has no effect on the level of auditing, the aggregate level of noncompliance, or revenues. Id. at 20. They model a decision whether to truthfully report observable income. See id. at 9-15.

\(^7\) 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. E.g., Gary S. Becker, Crime and Punishment: An Economic Approach, 76 J. Pol. Econ. 169 (1968). Michael G. Allingham & Agnar Sandmo, Income Tax Evasion: A Theoretical Analysis, 1 J. Pub. Econ. 323, 330 (1972), extends 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. See id. 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. Agnar Sandmo, The Theory of Tax Evasion: A Retrospective View, 58 Nat'l Tax J. 643, 659-60 (2005). A standard criticism of the model is that it underpredicts compliance under existing audit and penalty rates. Id. at 649. Sandmo covers much of this. He concludes that there are too many empirical unknowns to draw strong conclusions from the theoretical literature. Id. at 659.
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 the government will review the tax-
payer’s determination that \( t \) was owed (that is, \( p \) or the probability of
audit and the probability the government will determine \( t \) was not
owed). The right hand side is the expected cost of not paying \( t \), includ-
ing 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 \( a > 0 \), or for any probability of detec-
tion less than one and any chance \( t \) is not actually owed greater than
zero. Equation (4) suggests a straightforward solution, which is to re-
ward a taxpayer for an overpayment in the same ratio a taxpayer is
penalized for an underpayment, that is, multiply 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 pay-
ing \( t \) if
(6) \( (1 - pa)/(1 - a) = x \).

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

A crude example illustrates the points just made and adds a qualifi-
cation. Imagine a law professor receives a $1000 bottle of wine from
an old classmate who is a partner in law firm for which the professor
occasionally consults. Whether the bottle is a gift for tax purposes is
uncertain. Assume there is a one-in-four chance the wine will be clas-
sified as a gift (that is, \( a = .25 \)). 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 to the detection rate, she is better off treating it
as a gift. Assume the detection rate (\( p \)) is .05 and the penalty in-
creases the levy to twenty times the deficiency (\( 1/05 \)). If she declares
the wine as income, then the expected tax cost is $395 (assuming a
40% tax rate, $400 tax paid on $1,000 reported income minus $5, or
the $400 refund in the event the government classifies the wine as a gift discounted by the 5% probability of detection and the 25% probability the bottle will be classified as a gift). If she treats the wine as a gift, then the expected tax cost is $300 ($8000 ($400 x 20) discounted by the 5% probability of audit and the 75% 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, twenty will be examined on the item and fifteen will pay $8000 each. This yields the correct amount of tax on average for the 400, or $300 per taxpayer. This 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 I identify 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.

III. Uncertain Value and Risk Aversion as a Counterweight

The point just made about legal uncertainty extends to valuation. 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 II and for extending the analysis to penalty multipliers and fault-based penalties more generally. Part VI reexamines legal uncertainty incorporating lessons from the analysis of valuation. The bimodality of legal uncertainty may seem to make it an easier case than valuation. Legal uncertainty actually presents a much more difficult problem analytically and behaviorally.

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 may assign to the item if they are put to the decision. A taxpayer who takes penalties into account will try to predict the value a tax auditor is likely to assign to the item in the event the item is au-
dited. 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 decisionmaker 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.

For most of my simulations I generated 400 random numbers with a mean of approximately $100,000 and a standard deviation of approxi-
A taxpayer must select a value to report for the deduction knowing she will receive a tax benefit of forty 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 overpayment.

Figure 1 shows the expected return to a taxpayer of different reported values assuming a constant audit rate of 10% and that any deficiency found is multiplied by a factor of ten. 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 ($186,388). The expected return if a taxpayer claims the maximum possible value ($40,163) equals the average value ($100,407) times the tax rate (40%). 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 be $342,376. This is consistent with the analysis in Part II.

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 a position is audited. The other dimension

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10 I used targets of $100,000 and $25,000 respectively. The minimum and maximum values are $22,154 and $186,388.

11 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 costs in addition to the prospect of paying a penalty a taxpayer associates with being audited. These include legal and other fees in defending a position and associated nonfinancial costs (for example, emotional disturbance) as well as 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 an 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 an appeal is costless and valuation is de novo, then the option to appeal greatly reduces the expected cost to a taxpayer resulting from the risk an auditor will choose an improbably low value.
is the standard deviation in the outcome on audit. For both dimensions the risk is conditional on a taxpayer being audited. Both conditional risks increase exponentially as the reported value increases under a ten-to-one 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 conditional risk-reward tradeoff in reporting a higher value.

The exponential increase in conditional risk on the 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 find a lower value, in which case the deficiency will be multiplied by ten.

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12 I do not try to aggregate these two dimensions of risk into a single dimension of risk nor do I try to aggregate them with the expected return to show the risk-adjusted expected return at different reported values. Why becomes apparent shortly.
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 ($0.40 tax saved on the $1 multiplied by ten) 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 at taxes at an expected cost of $4.

The conditional 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

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13 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 $4000. The chance that the assessed liability will be less than $100,000 is roughly 50% so the expected liability increases by $2000.
rises steeply as the probability the assessed 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 compares the conditional expected loss (or refund) and the standard deviation in the outcome on audit with penalty multipliers of 10 to 1, 5 to 1, and 2.5 to 1 with the same assumptions and model as Figures 1 and 2.

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 conditional expected loss if the reported value is audited, discounted by the probability that the assessed value will be lower than the reported value. The conditional 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 item 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 that a penalty multiplier of 2.5 to 1 or 5 to 1 creates significant risk for a taxpayer who reports a mid-range value for an item of uncertain value. To underscore this point, Figure 4 isolates the
conditional variance in the outcome on audit and the expected loss 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 or 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 loss on audit is only slightly below what it would be if a taxpayer knows the value on audit will be $100,000.\textsuperscript{14} 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 increases the expected loss on audit.

\textbf{Figure 4}
\textbf{CONDITIONAL STANDARD DEVIATION AND EXPECTED LOSS ON AUDIT AT DIFFERENT PENALTY RATES}

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 in-

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\textsuperscript{14} 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 forty cents on the dollar multiplied by the penalty rate. Assuming a penalty multiplier of 2.5 to 1, 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 audit uncertain increases the expected loss on audit by $1400 to $121,400.
verse 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%. For example, assuming a 10% audit rate and a five-to-one penalty, a $1000 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 $1670 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 5% 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 10%. 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. This is because 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.15 "Loss aversion" refers to a human tendency to experience 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.16 Familiar examples include


16 Rabin & Thaler, note 15, at 227.
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.17

Tax penalties may function like a money pump.18 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 V shows that existing misvaluation penalties are sufficiently low that uncertainty about the outcome on audit generates little additional risk. What this analysis shows is that a misvaluation penalty multiplier in the range of 2.5 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 certain. This additional risk will bear particularly heavily on the minds of taxpayers who tend to over-weight the risk of large, low-probability losses.

IV. 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 mid-range 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-to-1 penalty multiplier a taxpayer will report a value of slightly over $91,000 if he or she wants to expect to break even in the event the value is audited. This is on an item with a mean possible value of $100,000. But even reporting such a conservative value leaves a taxpayer subject to significant risk because the government might choose a very low value. This risk is reflected in the conditional standard deviation in the outcome on audit, which is

17 Id. at 228.
18 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 Taxpayer Compliance Measurement Program data find a strong correlation between whether a taxpayer is in an under- or over-withholding position and taxpayer compliance. Otto H. Chang & Joseph J. Schultz, The Income Tax Withholding Phenomenon: Evidence from TCMP Data, 12 J. Am. Tax'n Ass'n 88, 89 (1990).
approximately $15,800 at a reported value of $91,000. This variance translates into a one-in-eight conditional risk of losing more than $25,000 on audit and a one-in-four conditional risk of losing more than $8000. This conditional risk increases steeply if a taxpayer reports a value higher than $91,000.

The large conditional risk on audit raises the concern that 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 misvaluation penalty on there being a sufficiently large divergence between the reported value and the assessed value of an item. The code imposes a 20% penalty (that is, 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% (that is, 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 although it is somewhat 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 the 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 values. 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

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19 IRC § 6662. For a history of the penalty, which was placed 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 Values, 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." IRC § 6659(e).
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.\textsuperscript{20}

Figure 5 illustrates. I retain most of the parameters of the model in Part III, 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).\textsuperscript{21} Figure 5 compares conditional 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 misvaluation has a small negative impact on the expected loss on audit and a somewhat larger impact on the variance in the outcome on audit until one gets to extremely aggressive reported values, where the additional penalty has a significant impact on both dimensions of risk.\textsuperscript{22}

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 stan-

\textsuperscript{20} 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 underpayment. This is the $4 reduction in tax attributable to the claimed value in excess of $150.

\textsuperscript{21} 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.

\textsuperscript{22} 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 while it increases the set of outcomes in which the recklessness penalty applies by $.33. There is little risk of incurring the recklessness penalty except at quite high reported values. Using the specified asset value probability distribution, an increase in 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.
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 that is produced by the cliff effect, which is the steep increase in the variance of audit outcomes at higher reported values.

V. ARE EXISTING PENALTIES FOR MISVALUATION TOO LOW?

The existing penalty structure for misvaluation 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 noncumulative 1.4 penalty multiplier if the reported value is 200% or more of the assessed value. A very low penalty rate suppresses risk on the dimension of

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23 IRC § 6662(a), (e)(1).
24 IRC § 6662(h). The actual penalty is somewhat higher once one accounts for the time value of money for interest that is charged on the penalty from the due date of the return. IRC § 6601(e)(2)(B).
audit outcome, leaving the expected loss 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**

**Conditional Standard Deviation and Expected Loss on Audit Under Current Law**

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, substituting an assumption that 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 that uncertainty of audit outcome creates a variance in the outcome that is independent of the penalty rate and is solely a product

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25 The expected loss on audit is slightly lower for values below the penalty thresholds (that is, 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.
of the uncertainty of the tax due. 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% respectively).

In sum the model indicates that under existing penalties the uncertainty of audit outcome creates little risk in aggressive valuation over and above the risk in misvaluing 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 hardly changes the risk.

So are existing penalties for misvaluation 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. On the other hand, taxpayers often complain about legal uncertainty, suggesting it weighs heavily on them. But these complaints typically are loudest when the government is attempting to enforce uncertain standards in the face of evidence of widespread undercompliance. 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.

26 See William A. Drennan, Strict Liability and Tax Penalties, 62 Okla. L. Rev. 1, 7-22 (2009). Drennan 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. Id. at 17. In one year in which Drennan reports the IRS was particularly aggressive in seeking the negligence penalty, only one in 217,391 individual filers were subjected to the negligence penalty and only one in 2076 individuals who were audited were subjected to the penalty. Id. at 17-18.

27 An example is the recent protests by industry groups of the crackdown on businesses that misclassify employees as independent contractors. See Steven Greenhouse, A Crackdown on "Contractors" as a Tax Dodge, N.Y. Times, Feb. 18, 2010, at A1.

28 An example is the political opposition to the efforts by 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. IRC § 385(a). See Lee Sheppard, Treasury Stands Up to Wall Street, 63 Tax Notes 386 (Apr. 25, 1994) (ascribing withdrawal of § 385 regulations to "Treasury's previ-
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 noncompliance. But the factors other than sanctions principally thought to promote compliance—including 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 items and paying uncertain taxes more generally. Little can be inferred about taxpayer behavior from data on the frequent bad experience incurring the wrath of the owners of closely held corporations”). Industry groups advocating withdrawal of the proposed regulations included the U.S. Small Business Administration, 20 Tax Notes 877 (Sept. 12, 1983), and American Venture Capitalists, see 20 Tax Notes 744 (Aug. 29, 1983).

29 See note 5 (listing some of the literature on this topic).

30 The most recent data on taxpayer compliance from the National Research Program is summarized in IRS, U.S. Treas. Dep’t, Reducing the Federal Tax Gap: A Report on Improving Voluntary Compliance (Aug. 2, 2007), http://www.irs.gov/pub/irs-news/tax_gap_report_final_080207_linked.pdf [hereinafter Federal Tax Gap], and in Mark J. Mazur & Alan H. Plumley, Understanding the Tax Gap, 60 Nat’l Tax J. 569 (2007). The broad findings are consistent with the results of the Taxpayer Compliance Measurement Program (“TCMP”) two decades earlier. Federal Tax Gap, supra, at 18. Both programs measure compliance by subjecting a large random sample of returns to thorough line item review. Id. at 7. Most of the tax gap is due to under-reporting income (and not failure to file or pay). Id. at 9-10 fig.2. 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. Id. at 15 fig.6. 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 in the TCMP data that uncertainty of a tax due encourages noncompliance. See Steven Klepper & Daniel Nagin, The Anatomy of Tax Evasion, 5 J.L. & Econ. & Org. 1 (1989). Klepper and Nagin use a line-by-line analysis of 1982 TCMP data and find that noncompliance significantly increases with the ambiguity of an item. Id. at 20. They include line items that require valuation (such as noncash charitable contributions) and items for which there is substantial legal ambiguity. Id. at 13. They use as a measure of legal ambiguity the number of revenue rulings pertaining to an item in 1982-1984. Id. A follow-on paper uses the same data and finds that use by a taxpayer of a paid preparer increases compliance on a return on unambiguous items and decreases compliance on ambiguous items. Steven Klepper, Mark Mazur & Daniel Nagin, Expert Intermediaries and Legal Compliance: The Case of Tax Preparers, 34 J.L. & Econ. 205, 226 (1991).

There are a large number 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 & Woon-Oh Jung, Experimental Evidence on Taxpayer Reporting Under Uncertainty, 66 Acct. Rev. 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. Id. at 537. The experiment specified a high audit rate (40% to 90%) and a penalty multiplier of 1.2 or 3. Id. at 543. The results were as you might expect. At a 40% audit rate and a 3-to-1 penalty multiplier subjects generally reported a value for an income item slightly below the mean possible value, ($750). Id. at 547 figs.1 & 2. Most subjects responded to a 90% audit rate by reporting a value close to the highest possible value. Id. fig.1. Most subjects responded to a 40% audit
frequency and magnitude of deficiency assessments involving 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 Art Advisory Panel. The panel reviews artwork appraisals. 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 a taxpayer has a right to do. Typically artwork is submitted to

rate and a 1.2-to-1 penalty multiplier by reporting a value near the lowest possible value. Id. fig.2.

Other studies while interesting do not address the behavioral phenomena that are the focus of this Article. See, e.g., Kristina Murphy, Aggressive Tax Planning: Differentiating Those Playing the Game from Those Who Don’t, 25 J. Econ. Psychol. 307, 321 (2004) (reporting 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 accountant” 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, finding 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 & Robert W. Wylde, An Examination of Tax Practitioner Decisions: The Role of Preparer Sanctions and Framing Effects Associated with Client Condition, 14 J. Econ. Psychol. 439 (1993) (reporting the results of 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); Dennis R. Schmidt, The Prospects of Taxpayer Agreement with Aggressive Tax Advice, 22 J. Econ. Psychol. 157 (2001) (reporting the result of a survey of U.S. 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)).

31 The Art Advisory Panel of the Comm’r of Internal Revenue, Annual Summary Report for 2008 (Closed Meeting Activity) 2 (2008), http://www.irs.gov/pub/irs-utl/annrep2008.pdf. Since 1984, taxpayers have been required to obtain a qualified appraisal to substantiate the value of property contributed to a charity if the property is worth more than $5000. IRC § 170(f)(11)(C). The appraisal must be included with the return if the property is worth more than $500,000. IRC § 170(f)(11)(D). When an estate has artwork worth in excess of $3000 regulations require that an expert appraisal be included with the estate’s return. Reg. § 20.2031-6(b).

32 Art Advisory Panel, note 31, at 3.

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. 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 misvalued 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 twenty-five 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.

Table 1 and Table 2 report increases and decreases in the value of artwork recommended by the Panel in the years 2001-2004 and 2006-2008. Table 1 reports items valued for estate and gift tax purposes. Undervaluation is generally (but not always) 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 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.

(2008); The Art Advisory Panel of the Commissioner of Internal Revenue, Annual Summary Report for 2008 (Closed Meeting Activity) 4 (2009). I do not exclude the cases from the total because the panel does not breakout the results on this subset of cases.


36 Art Advisory Panel, note 31, at 3.

37 Id.

38 The numbers are taken from the Art Advisory Panel’s Annual Summary Reports. See note 33; The Art Advisory Panel of the Commissioner of Internal Revenue, Annual Summary Report for 2001 (Closed Meeting Activity) (2002); The Art Advisory Panel of the Commissioner of Internal Revenue, Annual Summary Report for 2002 (Closed Meeting Activity) (2004); 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.

39 If an estate is not subject to the estate tax, overvaluation is in the taxpayer's interest because it establishes a higher basis in the property.
Table 2 reports items valued for purposes of claiming a charitable contribution deduction. Here overvaluation always is in a taxpayer’s interest. More than one-third (37.4%) of the items were deemed overvalued. 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 undervalued artwork contributed to charity were almost nonexistent prior to 2007 (5 out of 350 items reviewed or 1.4% of all items), though the magnitude of the undervaluation 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 undervalued 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.40

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<table>
<thead>
<tr>
<th>Cases</th>
<th>Items</th>
<th>Increase</th>
<th>Decrease</th>
<th>Reported Value:</th>
<th>Recommended Decrease:</th>
<th>Recommended Increase:</th>
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<tr>
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<td>83</td>
<td>623</td>
<td>210</td>
<td>$109.1</td>
<td>$67.8</td>
<td>$14.9</td>
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<td>86</td>
<td>459</td>
<td>91</td>
<td>74.8</td>
<td>28.1</td>
<td>24.8</td>
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<tr>
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<td>118</td>
<td>558</td>
<td>171</td>
<td>83.4</td>
<td>38.2</td>
<td>30.1</td>
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<tr>
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<td>107</td>
<td>741</td>
<td>99</td>
<td>297.4</td>
<td>130.3</td>
<td>73.1</td>
</tr>
<tr>
<td>2005</td>
<td>114</td>
<td>1573</td>
<td>849</td>
<td>211.3</td>
<td>127.1</td>
<td>121.2</td>
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<tr>
<td>2006</td>
<td>120</td>
<td>863</td>
<td>59</td>
<td>246.3</td>
<td>141.5</td>
<td>82.3</td>
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<tr>
<td>2007</td>
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<td>782</td>
<td>456</td>
<td>110.0</td>
<td>88.5</td>
<td>42.1</td>
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<td>2660</td>
<td>$1,132.3</td>
<td>$621.4</td>
<td>$439.2</td>
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40 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% of the underpayment (but no lower than $1,000) or 125% of the fee paid for the appraisal if the claimed value of the property results in a substantial or gross valuation misstatement. IRC § 6659A(b).
Table 24

Panel Review of Art Valued for Charitable Contribution Purposes

<table>
<thead>
<tr>
<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 Decrease Items</th>
<th>Recommended Decrease</th>
<th>Recommended Increase Items</th>
<th>Recommended Decrease Items</th>
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<tbody>
<tr>
<td>2001</td>
<td>6</td>
<td>2</td>
<td>19</td>
<td>$4.4</td>
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<td>4</td>
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<td>0.0</td>
<td>25.2</td>
<td>15.1</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>4</td>
<td>56</td>
<td>3</td>
<td>119.1</td>
<td>6.5</td>
<td>2.5</td>
<td>75.0</td>
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<tr>
<td>2004</td>
<td>7</td>
<td>184</td>
<td>0</td>
<td>8.9</td>
<td>0.0</td>
<td>0.0</td>
<td>7.4</td>
<td>5.1</td>
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<tr>
<td>2006</td>
<td>10</td>
<td>50</td>
<td>0</td>
<td>6.2</td>
<td>0.0</td>
<td>0.0</td>
<td>3.3</td>
<td>1.9</td>
<td></td>
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<tr>
<td>2007</td>
<td>11</td>
<td>115</td>
<td>18</td>
<td>26.7</td>
<td>1.6</td>
<td>1.3</td>
<td>17.4</td>
<td>8.2</td>
<td></td>
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<td>2008</td>
<td>21</td>
<td>168</td>
<td>10</td>
<td>114.5</td>
<td>5.5</td>
<td>9.1</td>
<td>17.5</td>
<td>8.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>633</td>
<td>33</td>
<td>237</td>
<td>$305.2</td>
<td>$13.7</td>
<td>$12.9</td>
<td>$148.7</td>
<td>$71.3</td>
</tr>
</tbody>
</table>

If taxpayers reported values near the mid-range of possible values, then one 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.

VI. 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 on a legal question is bimodal.

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41 See note 38.

42 It would be useful to breakout the recommended changes in items 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.

43 See notes 29-30 and accompanying text.

44 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 I say a point of
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 II shows that because of the asymmetric treatment of underpayments and overpayments 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 one 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 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 not be business related and a 40% tax rate. The horizontal axis is the probability the expense is personal, which ranges from zero to one. I assume a 10% audit rate and a ten-to-one 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 $4000 in taxes but takes a one-in-twenty risk of having to

tax law is legally uncertain I mean a taxpayer cannot predict with certainty what a government official or body with authority will say the law is as applied to the facts. In principle, this is a court of final authority or the Secretary of Treasury (if the point is one in which the Secretary is vested with final discretion). In reality a taxpayer will perceive authority as dispersed in complex ways across a hierarchy of officials with the expected influence of each official a function of his or her priority in identifying and addressing an issue, the deference a decision is likely to be given to an official’s decision by others in the hierarchy, and the willingness of a taxpayer to make an effort to try to reverse an adverse decision, such as by appealing a decision to a superior official.

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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 $4000 in taxes while taking a one-in-fifty chance of having to pay $4800 in the event of audit, discounted by whatever the small probability is of the deduction being sustained on audit.\footnote{A taxpayer has the ability to test a risky position without exposing themselves to a penalty by paying the tax due if they are wrong and then filing an amended return to claim a refund asserting the position they want to test. See IRC §§ 6532(a)(1), 7422. This route often is taken by taxpayers who want to challenge the constitutionality of a rule.}

Earlier I suggested a 2.5 penalty multiplier 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 on audit simply is the amount of the tax at stake, discounted by the probability of the taxpayer's position being sustained, and 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 V 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 a non-tax avoidance transaction the penalty does not apply so long as the taxpayer had “substantial au-

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 success,” which the Treasury equates in Circular 230 with a one-in-three 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 nature though some may think it epistemological. 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


48 IRC § 6662(d)(2)(B)(ii)(II). The reasonable basis standard was also used in ABA Comm. on Prof’l Ethics, Formal Op. 314 (1965), to define the weakest position an attorney may ethically advise a client to take. (Formal Op. 314 was subsequently replaced by ABA Comm. on Ethics & Prof’l Responsibility, Formal Op. 85-352 (1985) [hereinafter ABA Opinion 85-352], which requires “realistic possibility of success.”) 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.”

49 Prior to 2007 a tax return preparer was subject to penalty under § 6694 if an understatement was attributable to a position that did not have “a realistic possibility of success” unless the position was disclosed. See Technical Explanation, note 46, at 34. This also is the standard under Circular 230 for the weakest position a tax professional may recommend be taken on a return without disclosure. 31 C.F.R. § 10.34(a). “Some realistic possibility 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% while “some reasonable basis” might be satisfied by a 5% to 10% probability of a position being sustained. Paul J. Sax, James P. Holden, Theodore Tannenwald, Jr., David E. Watts & Bernard Wolfman, ABA Special Task Force Report on Formal Opinion 85-352, reprinted in 39 Tax Lawyer 635 (1986). AICPA, Statement on Standards for Tax Services No. 1, Tax Return Positions (2010), available at http://www.aicpa.org/research/standards/tax/pages/default.aspx, adopts the same standard for CPAs and makes similar ordinal comparisons with other standards but does not translate the standard into a probabilistic prediction.

50 31 C.F.R. § 10.34(d)(1).
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 officially assessed value of an item is the objective or true value for a large difference in value reported by the taxpayer is readily explained by carelessness or dishonesty on the taxpayer's part. A point made earlier is that there is logic in a fault-based valuation penalty even if one recognizes the official assessed value represents no more than a value selected by an official from a large range of possible values. As explained in Part IV, a fault-based valuation penalty reduces the risk to a taxpayer who reports a mid-range value created by the possibility that an official will choose an extreme value from the range of possible values.

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.51 In particular, a taxpayer will worry that the relevant official in making

51 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 information
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 one-in-ten 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 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.

that differs in a material respect from the information that is considered by the official in evaluating the taxpayer's legal position.


53 The more-likely-than-not standard tends to collapse into strict liability—in other words, 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.
The more forgiving standards of fault may encourage a different mindset that is 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.\textsuperscript{54} 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 one 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 one. The inflection point depends on the standard of fault and one’s assumptions about the pattern of official bias in evaluating the bona fides of legal analysis with which the official disagrees. A less forgiv-

\textsuperscript{54} William Drennan accues judges of having this mindset. He observes judges often decline to impose penalties that are sought by the government if a “transaction was complicated; the law was unsettled; the issue was ‘novel’; the taxpayer’s position was not ‘clearly erroneous’; the taxpayer’s position was ‘reasonably debatable’; and at least five other judicially created excuses.” Drennan, note 26, at 19-20.
ing standard of fault, such as more likely than not, will move the infection point to the left.

\[ \text{FIGURE 8} \]

Expected loss on audit if penalty is automatic

Expected loss on audit under a forgiving fault-based penalty

Probability tax is owed \((1 - a)\)

Like a fault-based penalty for misvaluation, a fault-based penalty for legal error suppresses 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 misvaluation because of the bimodality 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.

VII. CONCLUSION AND CAVEATS

The major points of this Article are as follows. (1) At a sufficiently high penalty rate there is a strong case for fault-based penalties for misvaluation 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 moderate penalty rates on the order of 2.5-to-1 or 3-to-1. (3) At these penalty rates making the penalty for misvaluation fault-based has the beautiful property of suppressing risk if a taxpayer reports a moderate or conservative value while increasing risk if a taxpayer reports an extreme value. (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 overpayments and underpayments. 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 underpaying 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 just described is an effective deterrent to aggressive underpayment 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 overweight 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 misvaluation 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 somewhat mitigate 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 underpayment 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.