THE FLAW OF AVERAGES IN U.S. CORPORATE INCOME TAXES: AN EVALUATION FROM THE TAXPAYER'S PERSPECTIVE

By Michael H. Salama[*]

TABLE OF CONTENTS

I. INTRODUCTION

In a market environment of intense competition for capital investment and use of funds, well managed companies place a significant emphasis on cash controls to optimize performance and increase attractiveness to investors. In the United States one of the most significant cash requirements is a company's federal income tax liability.[1] For all but a few privileged firms, reliable estimation of cash tax needs is crucial to operations. It is also hard to ignore that we live in an age where company performance is measured by market analysts on a quarter-to-quarter basis. This puts pressure on companies: (1) to avoid surprises from the analyst consensus of forecasted quarterly earnings and after-tax free cash flows; and (2) to reduce volatility in effective tax rates which may be driven by income tax return positions.

Significant unknowns exist for firms when they estimate their U.S. income tax liability during a year for purposes of making quarterly estimated tax payments. Corporations owing more than $500 in income tax for their tax year must make estimated tax payments on a quarterly basis to the Internal Revenue Service (Service); otherwise, such corporations are subject to penalties.[2] There is generally variability in pre-tax book income. Macro and micro economic conditions may, and often do, change during the year. These changes

---

    [1] For example, for FYE 1/31/10 Home Depot, Inc., a component of the Dow Industrial Average 30, reported a tax provision of $1.362 billion on income from continuing operations of $3.982 billion, an effective tax rate of 34.2%, just slightly lower than the Federal statutory rate of 35%. The Home Depot, Inc., Annual Report (Form 10-K) 20–21 (Mar. 22, 2010). The company reflected a tax payable in the amount of $108 million. *Id.* at 33.

    [2] I.R.C. § 6655(f).

cause fluctuation in consumer demand, the cost of inputs, and a host of other business drivers that impact gross receipts. Moreover, certain income streams may qualify for particular tax credits and/or benefits. Incentives and tax attribute utilization may be dependent upon levels of gross receipts. These items often impact the overall estimate of a firm's income tax liability. Uncertainty also exists in the income tax provision context. The structure of the technical accounting rules regarding tax contingencies and deferred tax assets may not yield intuitive results in all cases.

Current estimated tax and provision models are typically based upon simple point-estimates. Static data points fail to provide a range of potential values and deny the user a meaningful way of making a decision based upon one's risk appetite. In addition, static models do not account for non-linearities, which will cause the average expected value to differ from the actual average. Sam Savage, a fellow at the Judge Business School at Cambridge, has coined a term for this — "the flaw of averages." It states that: "Plans based on average assumptions are wrong on average."[3] Savage provides a nice illustration of this: "Consider a drunk staggering down the middle of a busy highway. . . and assume that his average position is the centerline. Then the state of the drunk at his *average* position is alive, but on *average* he's dead."[4] Savage's take on this is an elegant way to explain Jensen's inequality. Jensen's inequality provides that for the convex (concave) function F of a random variable X, $F(E(X)) \leq E(F(X))$ (or $F(E(X)) \geq E(F(X))$ for concave functions) where E is the expectation operator.[5]

A survey of the literature reveals surprisingly little work in the tax context in evaluating Jensen's inequality given the broad population impacted and the hundreds of millions of dollars at issue every year in tax revenues and provision related items. Primary existing work in this space addresses instances of the flaw of averages where the taxes are contingent (e.g., sliding scale mineral royalties),[6] consideration of

---

[3]   SAM L. SAVAGE, THE FLAW OF AVERAGES: WHY WE UNDERESTIMATE RISK IN THE FACE OF UNCERTAINTY 11 (2009) (emphasis omitted).

[4]   *Id.* at 83.

[5]   There are in essence four cases of Jensen's inequality where the graph of the formula is: (a) a straight line and the formula's average value is the formula as evaluated at the average input; (b) a convex curve and the formula's average value is more than the formula assessed at the average input; (c) a concave curve and the formula's average value is less than the formula assessed at the average input; and (d) something else — where "Jensen's inequality keeps its mouth shut." *Id.* at 91–92.

[6]   M.R. Samis, G.A. Davis & D.G. Laughton, *Using Stochastic Discounted Cash*

optimal tax regime structuring by the government,[7] the similar topic of risk spreading properties of fixed fee, profit-sharing and other common taxes,[8] and the impact of differing national tax rates on underwriting capacity and reinsurance markets.[9] A thought piece was published on the concept of expected values in financial reporting; yet, this article includes little discussion of applications in the tax context nor does it address methods or means for companies to identify and proactively address the flaw of averages in tax.[10] In the current state, the academic literature has yet to identify key sources and occurrences of the tax consequences of the flaws of averages. Wide industry practice of using point estimates suggests a high probability that companies are largely unaware of their very existence in many contexts.

In Microsoft Excel, Jensen's inequality and the flaws of averages are often identifiable based on the occurrence of max, min, if, and nested logic functions. The aim of this paper is to go beyond analysis of commonly used Excel models, identify substantive key common tax flaws of averages, provide readership awareness of them, and furnish practical guidance on how to cope with them. Monte Carlo simulation is employed to demonstrate how to most properly account for the relevant uncertainties and influence decision making in light of different risk appetites.[11] The paper's key finding is that probabilistic modeling and analysis is critical to a constructive assessment of cash-tax requirements and related income statement impacts associated

---

Flow and Real Option Monte Carlo Simulation to Analyse the Impacts of Contingent Taxes on Mining Projects, June 19, 2007, http://inside.mines.edu/~gdavis/Papers/ AusIMM.pdf.

[7] *See, e.g.*, Helmuth Cremer & Firouz Gahvari, *Uncertainty, Commitment, and Optimal Taxation*, 1 J. PUB. ECON. THEORY 51 (1999); Peter A. Diamond, *Optimal Income Taxation: An Example with a U-Shaped Pattern of Optimal Marginal Tax Rates,* 88 AM. ECON. REV. 83 (1998); J.A. Mirrlees, *An Exploration in the Theory of Optimum Income Taxation*, 38 REV. ECON. STUD. 175 (1971); Jeff Strnad, *Taxes and Nonrenewable Resources: The Impact on Exploration and Development*, 55 SMU L. REV. 1683 (2002).

[8] J.K. Sebenius & P.J.E. Stan, *Risk-Spreading Properties of Common Tax and Contract Instruments*, 13 BELL J. ECON. 555 (1982).

[9] James R. Garven & Henri Loubergé, *Reinsurance, Taxes, and Efficiency: A Contingent Claims Model of Insurance Market Equilibrium*, 5 J. FIN. INTERMEDIATION 74 (1996).

[10] L. Todd Johnson et al., Commentary, *Expected Values in Financial Reporting*, 7 ACCT. HORIZONS 77 (1993).

[11] There are many software packages which may be used to conduct Monte Carlo simulation within Microsoft Excel's realm, such as @Risk, Crystal Ball®, and XLSim®. The modeling in this paper relies on XLSim®.

with uncertain tax positions. While this analysis should not supplant managerial judgment and experience, it informs the analysis necessary for making more reasoned conclusions about tax uncertainties.

II. VARIABILITY OF INCOME: THE FLAW OF AVERAGES IN ESTIMATED TAX

A. Case Study: Forecasting the Tax Liability on a Theatrical Film's Performance

1. A Limited Release Title

Estimating one's income tax requirements for the year and making quarterly estimated tax payments, requires one to forecast different aspects of business unit performance and the relative tax burdens they carry. This paper starts with the simple example of a limited release U.S. theatrical film and demonstrates why using average values yields the wrong answer on average. Assume the price per ticket is $12 and the exhibitor of the film receives 50% of gross receipts. While ticket prices may vary from town to town, a static figure is used to illustrate the main theme. The number of ticket sales prior to the release of the film is unknown. The producer typically will estimate a low case, most likely case, and best case scenario and use the average for tax payment estimation purposes. For upper management reporting purposes, the high and low will generally be shared as well. Here, ticket sales estimations are: (1) low: 350,000; (2) most likely: 550,000; and (3) high: 1.4 million. The average is 766,000. However, as is common in the industry for limited initial releases, should the film fare well in the opening weekend and first few weeks, the producer will expand the number of screens upon which the film is exhibited or extend the theatrical run. Assume the studio sets this benchmark at 900,000 tickets. Applying a 35% federal statutory rate to the average estimates would indicate a tax requirement of $1.6 million.

Number of Tickets Sold	766,666
Price Per Ticket	$12
Exhibitor Share	$4.6M
Total Producer Revenue	**$4.6M**
Estimated Tax at 35% = $1.6M	

But wait, is this right? There is a non-linearity in this scenario. If the film performance exceeds a certain level, there is a potential for even more ticket sales. Using average values fails to take this expansion option into account. Monte Carlo simulation was employed to model the same film performance. While a time-series based performance model might have been employed in this context, a more simplified version was used for illustration purposes. Ticket sales were estimated using the gen_normal distribution function in XLSim® = max(0,gen_normal(550,000, 250,000)) (based on historical experience for a similar type of title for illustration purposes). The max function was used to eliminate negative values and its very use also introduces another flaw of averages. The expansion option was given effect with an if statement = if(max(0,gen_normal(550,000, 250,000)) > 900,000, 1,400,000, max(0,gen_normal(550,000, 250,000)). In other words, if on a randomized basis, using the studio's historic normal distribution, the film exceeded 900,000 ticket sales it was assumed the film would be held over and/or shown on more screens and achieve its high of 1.4 million in ticket sales; otherwise ticket sales were projected using the gen_normal function. This model was run for 1,000 trials. The statistics from the simulation reflect a very different story:

Probability*	Profit Before Tax	Estimated Tax at 35%
25%	$2.33M	$.82M
50%	$3.34M	$1.17M
75%	$4.42M	$1.55M

*Probability percentiles reflect the likelihood the amount is equal to or less than the amount shown.

Here, using average revenue value does not produce the true average estimated tax due. The static model would have suggested the firm pay close to $400,000 more in estimated taxes then the probabilistic model indicates.

Probabilistic modeling of course also provides a distribution of potential outcomes so that one can decide upon the estimated tax payment with more complete information. This is not to suggest that probabilistic models necessarily produce "the right answers." However, they take into account uncertainty, cure the tax flaw of averages, and allow the company to provide its own gloss on tax risk

2011]   *The Flaw of Averages in U.S. Corporate Income Taxes*   637

sensitivity to the problem in a fashion otherwise unavailable with the point estimate approach.

2.   Formulating Sounder Complex Models

In the prior example the distribution for ticket demand was simply given. From a practical perspective, businesses will want to develop a library of distributions based upon operational results and other available information. Although not a common practice in the past, new technologies are facilitating the generation and maintenance of such probabilistic libraries. Specifically, a new data type known as the distribution string enables libraries of probability distributions that may be shared within or across organizations.[12] The taxpayer can then make choices from that library for realistic distributions, beyond mere management hunches, based upon appropriateness of fit and similarities in traits to what is being estimated. For example, suppose one is trying to estimate the total domestic box office dollars for a broad theatrical release of an animation title prior to actual release. One might gather historic information on its own prior releases as well as publicly available information on other titles. Examining the shapes for opening box office and cumulative box office for the top-200 post-1980 releases, each appears to be lognormal (as does the ratio of one to the other), corroborating a widely-held belief in modeling circles that revenue streams will have a lognormal shape rather than a normal one.[13]
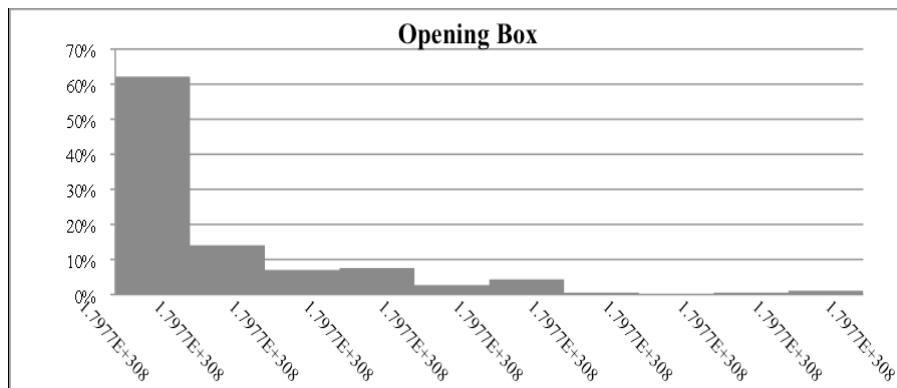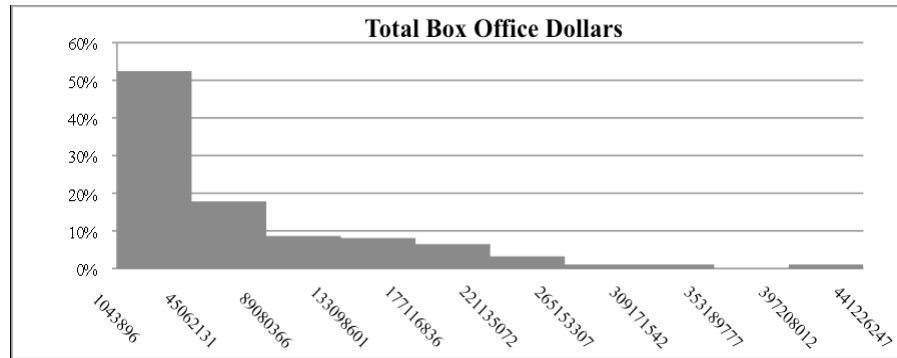

Depending on the nature and character of the soon-to-be released title, it may make sense to select a subset of titles to form the total top-200 feature animation distribution to estimate performance. Feature animation titles might be sorted by relevant traits such as computer-generated vs. hand-drawn, Summer vs. Winter release, 3D vs. 2D, story line characteristics, voice-talent, etc. Consideration of these traits helps to formulate an appropriate distribution shape reflecting performance of titles similar to the one to be released.

Also, it is often useful to consider relationships within data sets and operational results that might aid in estimation approaches. Here, examining the top-200 post-1980 domestic box office feature animation titles reveals a strong, R=.84, linear correlation between opening box office and cumulative box office. This corroborates a commonly held belief that the open has some relationship to how well the film performs overall. Depicted below is the linear best fit for the top fifty wide-release feature animation titles, demonstrating the relationship between open and cumulative box office. The coefficient of determination R^2 of .7, reflects the responsive variable is largely explained by the explanatory variable.[14]

---

[14] $R^2 = \{ (1 / N) * \Sigma [(x_i - x) * (y_i - y)] / (\sigma_x * \sigma_y) \}^2$

N = the number of observations in the model, x = the mean of x values, y = the mean of y values, σ_x = the standard deviation of x values, and σ_y = the standard deviation of y values.
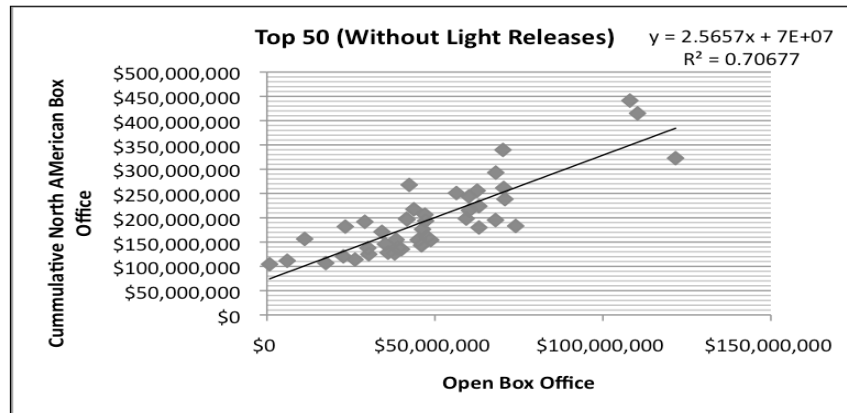
One might employ this relationship to estimate the overall performance of a title. A Monte Carlo simulation run on a distribution of opening performances, with cumulative revenues computed based upon historic multiples of opens, would provide one with a probability curve. On a pre-opening basis, this approach is superior to estimating the performance of the current film by simply averaging the cumulative box offices of similar titles. This type of model might be best employed after the opening weekend results are in hand, given the relationship between the open and cumulative box office results. Similarly, it can be refined as new information based upon performance is in hand. The general approach of using events as a basis for forecast future revenues or expenses may be incorporated into the forecasting process for book-to-tax differences reflected in Schedule M-1 Federal income tax return adjustments or book income or expense trends too.

A common defensive theme respondents espouse to this suggestion is that a proffered distribution curve does not accurately capture their scenario and every potential variable that may affect their business. Models can and should be improved upon, but they will never be perfect. Sound modeling strives to capture the important variables and not every potential variable regardless of significance. The intelligent use of models is to inform decisions, not make decisions. Opting for a point estimate approach over a well thought out probabilistic model is like choosing to only eat fast food because cooking at home is too much trouble. In this context, the new technologies for storing probability distributions are akin to frozen microwave gourmet meals and further strengthen the case for probabilistic models.

B. Tax Attribute Utilization and Progressive Effective Tax Rates

The prior film example reflects the uncertainty faced in estimating tax obligations based upon variability in operational results. The existence and use of tax attributes adds further complexity and additional opportunities for the flaw of averages to creep in. Suppose a firm's income averages $1,500x and that it has a net operating loss (NOL) carryover that it must utilize in the next five years. The NOL's current year use is limited to the amount of positive income in the current year. So for purposes of estimating and paying taxes for the current year, on average the company would have a tax liability of $490x ($1,500x average income less $100x NOL, times 35% corporate tax rate). The company's average effective income tax rate is 32.67% ($490x/$1,500x). But this model ignores the uncertainty associated with the company's income. Conducting a sensitivity analysis on the income levels reveals the effective cash tax rate function is concave. The effective rate is low as the income levels are low but approaches the statutory rate as income increases and the NOLs have been fully absorbed.
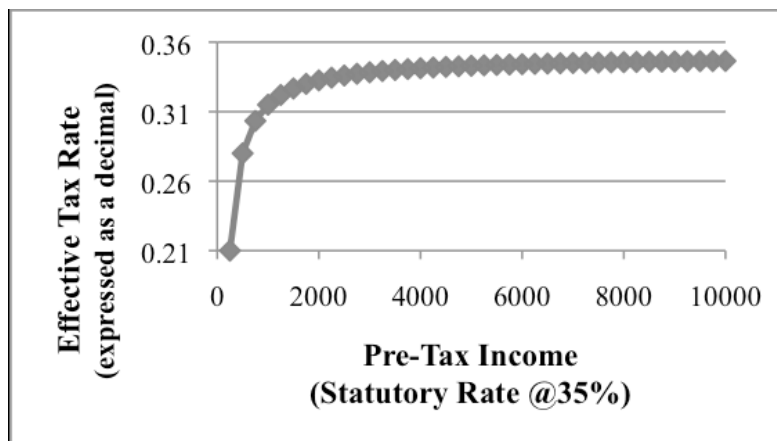
In order to forecast the company's estimated tax liability, it should develop a distribution for potential income levels and run a Monte Carlo simulation to inform decision making around the levels of NOLs likely to be utilized and the probabilities associated with different levels of estimated taxes. For illustration, assume the company is a start-up and has a great degree of income level uncertainty such that it is equally likely the company's performance will range from a $1,000x loss to a $4,500x profit. Simulating this using the gen_uniform function in XLSim® for 1,000 trials reflects an actual average tax of $457x and a 30% chance no tax is due. Now assume the

company's performance has less uncertainty, and its average revenue is $1,500x with a standard deviation of $500x. Simulating this using a max of (0,gen_normal(1500x,500x) for 1,000 trials reflects an actual average of $483x. Non-linearities attributable to the tax attribute utilization have an impact here.[15] On average, the amount of tax due is not the same amount as using mere averages to project the liability. Just using the average results in paying more than the actual average would have suggested. As with the feature animation film illustration, one would want to develop a shape of uncertain numbers and then build models based on them to produce a distribution of potential results. Without doing so the impact of non-linearities will not be given effect.

Now we know to look for the flaw of averages in estimating income tax obligations. Beyond attempting to model the income and resulting tax distributions, to arrive at an informed judgment one should also consider what can be done from an operational perspective. Many corporations engage in robust risk management techniques to hedge variability in foreign exchange risk, the cost of production inputs, and other variables. So, the question is, is there any value to this from a tax perspective? Where the effective tax function is linear, hedging generally will not impact the firm's estimated tax liability when one uses the average pre-tax income to compute expected tax liability for the year.[16] However, the existence of tax attributes such as NOLs and foreign tax credits with limitations on their use, research and development tax credits which may be capped at certain levels, and the alternative minimum tax, may result in a progressive corporate tax effective rate and a non-linear effective tax rate curve, even though the statutory rate itself is fixed at 35%.[17] While this concept was touched upon in the literature as part of an overall analysis of corporate risk management, it was not quantitatively depicted. The case examples provided illustrate the issues associated with concave effective tax rate functions where low income levels carry low effective tax rates and high income levels bear higher tax rates.

Where the effective tax function is non-linear there is a company incentive to explore hedging techniques. Attempting to mitigate variability of income may produce a result where the increase in tax in

---

[15] Note that using the max function itself also introduces a non-linearity.

[16] Clifford W. Smith, Jr., *Corporate Risk Management: Theory and Practice*, J. DERIVATIVES, Summer 1995, at 21, 26.

[17] *Id.* at 26.

poor years is less than the tax decrease in better years, driving the expected tax liability down.[18] However, this suggestion from the literature does not appear to take into account that the penalty for an upside surprise in income levels may be more tax liability. Incremental post-tax profits are generally a welcome surprise, even where it means accelerated utilization of tax attributes and a higher effective tax rate. Hedging techniques will yield the most utility where they mitigate potential losses that might cause tax attributes either to expire or have their use delayed.

C. The Estimated Tax Payment Double-Whammy

At this juncture the paper has explored the impact of non-linearities in revenue streams and tax attribute utilization on estimated tax analysis. An obvious set of questions arise: "What happens if we're wrong? What if we over or under estimate our tax liability?" The double whammy is yet another example of the flaw of averages. It occurs when there is penalty on either side of missing the estimate where the estimate is the average value. Savage provides the example of a pharmaceutical firm distributing a perishable antibiotic.[19] The company must estimate the amount of antibiotic to stock and decides upon using the average demand amount. However, if the demand is less than the stocked amount, the firm suffers from a $50/unit spoilage charge. If the demand is more than the stocked amount it suffers from a penalty of $150/unit for expediting the shipment of more units. This is like the example of the drunk in the middle of the road; at the average position he is okay, but on average he is dead. In the double-whammy, there is a financial penalty on either side of the average position which is not negated. There are no costs attributable to average demand but significant financial penalties when average demand is not achieved.

The tax code provides a penalty for failure to pay estimated taxes. Generally, corporations that underpay their estimated taxes have to add to their tax an amount equal to the underpayment interest rate times the amount of the underpayment for the period of underpayment.[20] Interest on underpayments are tied to the short-term federal rates and compounded daily.[21] The corporate underpayment

---

[18] *Id.*

[19] SAVAGE, *supra* note 3, at 14–16.

[20] I.R.C. § 6655(a).

[21] I.R.C. § 6621(a)(2).

rate for the first quarter of 2011 is 3%.[22] But there is also a penalty for overpaying one's estimated taxes — the company loses the use of the funds. In most cases the company's weighted average cost of capital (WACC) will far exceed 3%. Where one pays the government too much, overpayment interest is due at 3% generally, and 2% for corporations who make overpayments under $10,000, with the portion over $10,000 only receiving interest of 0.5%.[23] This is unlikely to be viewed as a good consolation prize to the management in one's corporate treasury function.

If one uses simple averages to estimate one's tax obligation he'll typically end up with a penalty, either the Service demanding the 3% underpayment penalty or the corporate function wanting to know why funds were put on deposit with the government at 2% or 0.5% when the company could have earned, say a 15% return. So, what should be done? Neither the academic nor the management literature addresses this concept from an estimated tax perspective. A prudent approach would be to create a probabilistic model to estimate the impacts and lean towards underpaying if the penalty for missing in that direction (the 3% Service penalty) is less than missing in the other direction (WACC less the 2% or 0.5% overpayment interest — or more likely the short-term cost of capital which may look like the short-term risk-free rate such as based on a one-year U.S. Treasury return — plus the short-term return on a well performing equity). One would want to create potential distributions for the uncertain numbers as in the prior examples, layer on the cost impact of the penalties in either direction; and then use a parametric simulation to determine what would likely happen if the estimate was missed by various multiples. Where the short-term opportunity cost of capital was lower than the full WACC — which in most cases it certainly will be — or actually less than the penalty for overpayment, this is still the framework to apply unless the penalties on each side happen to be equal. This approach would lead to a more informed use of funds. The company would, of course, need to make payments on its ultimate actual tax liability (for example in the fourth quarter, upon extension of the return filing, or with the filing of the tax return). Since the under and overpayment amounts are set by federal statute and tied to U.S. Treasuries, they are not susceptible to substantial and immediate overhaul. Therefore, as of the date of this paper this technique appears to be a stable method for assessing cash tax requirements.

---

[22]   Rev. Rul. 2010-31, 2010-52 I.R.B. 898.

[23]   *Id.*

III. ACCOUNTING FOR TAX UNCERTAINTIES AND RELATED
PROVISION MATTERS

The first section of this paper focused on the flaw of averages in the estimated tax liability context in light of the importance of cash management strategies. Equally important to the firm is the soundness of its financial statements. The second section of the paper addresses several of the most pervasive flaws of averages in the tax accounting context.

*A. Background on FASB Interpretation No. 48
(FIN 48 or ASC 740-10)*

Tax filing positions are sometimes not free from doubt. This may occur for a variety of reasons including, for example, lack of definitive applicable guidance, complete absence of guidance, or contradicting legal authorities. Companies that prepare their financial statements in accordance with U.S. Generally Accepted Accounting Principles (U.S. GAAP) must apply the relevant Financial Accounting Standards Board (FASB) guidance as codified. The FASB's guidance on accounting for uncertainties in income taxes contains a number of flaws of averages. In some instances the critical learning is to merely be aware of the occurrence as the technical accounting rules do not allow for mitigation. However, in other instances one can and should go beyond mere awareness to seek a better understanding of underlying data sources to produce a more informed judgment. This discussion provides practical recommendations where such are feasible.

So why should we care about this? The guidance, and the flaws of averages embedded within, reaches a broad array of firms. Generally entities trading on major U.S. stock exchanges are required to prepare their financial statements employing these standards.[24] And, its scope is similarly vast as it applies to positions taken, or anticipated to be taken, on a tax return that directly or indirectly affect amounts reported on financial statements.[25] For example, the framework

---

[24] ACCOUNTING STANDARDS CODIFICATION, § 740-10-05-6 (Fin. Accounting Standards Bd. 2009). All corporations publicly traded in U.S. capital markets are required to either prepare financial statements in accordance with U.S. GAAP or provide a reconciliation to U.S. GAAP net equity. 17 C.F.R. § 229.10(e) (2008).

[25] ACCOUNTING STANDARDS CODIFICATION, Topic 740 (Fin. Accounting Standards Bd. 2009). The glossary defines the phrase "tax position" to include a position in a previously filed return, or one expected to be taken on a future return,

applies to a company's decision not to file a tax return for a particular jurisdiction where there may be uncertainty as to whether it has a nexus in a particular U.S. state, i.e., sufficient contacts with the state to subject it to taxation therein, or a permanent establishment in a foreign jurisdiction, which would subject the entity to potential taxation therein.

B. The Flaw of Extremes

Under U.S. GAAP the starting point for assessing uncertain income tax positions is defining the unit of account. A unit of account is determined by reference to all relevant facts and circumstances of the position in light of the relevant evidence.[26] One must consider: (1) the "manner in which the entity prepares and supports its income tax return" and (2) how the taxing authority will examine the position.[27] Accounting and assurance firms generally take the view that a unit of account, and its related assessment, ought to be based on its own technical merits and facts. For example, PricewaterhouseCoopers LLP's manual provides: "The possibility of offset in the same or another jurisdiction and the possibility that the position might be part of a larger settlement should not affect the determination of the unit of account."[28] Similarly, the technical merits of each position taken under the unit of account standard must be evaluated separately — "[e]ach tax position shall be evaluated without the consideration of the possibility of offset or aggregation with other positions."[29]

Once one has defined the unit of account, one must now apply the recognition threshold for uncertain tax positions. A firm shall recognize the financial statement impact of its tax position when,

including but not limited to:

> A. A decision not to file a return; B. An allocation or shift of income between jurisdictions; C. The characterization of income or a decision to exclude reporting taxable income in a tax return; D. A decision to classify a transaction, entity, or other position in a tax return as tax exempt; E. An entity's status, including its status as a pass-through entity or a tax-exempt not-for-profit entity.

*Id.* § 740-10-20.

[26] *Id.* § 740-10-25-13.

[27] *Id.*

[28] PRICEWATERHOUSECOOPERS LLP, GUIDE TO ACCOUNTING FOR INCOME TAXES § 16.3.1.2 (2010).

[29] ACCOUNTING STANDARDS CODIFICATION § 740-10-25-7(c) (Fin. Accounting Standards Bd. 2009).

based on the technical merits, the firm's position is more-likely-than not (MLTN) the position that will be sustained (through exam, related appeal, or litigation).[30] In this context, MLTN means greater than 50%.[31] Where management is unable to reach this conclusion, no tax benefit for the position can currently be reflected in the financial statements. Take the unit of account worth $100x where based on the technical merits the firm is unable to reach the MLTN standard. However, suppose that based on its experience it reasonably believes it has a 70% chance of sustaining $30x and a 30% chance of sustaining $50x. While the weighted average of its distribution is $36x (also less than the implied MLTN hurdle) under FIN 48 the company will book no benefit. Moreover, the company will have to burden its income tax provision with a reserve for the full $100x. This result is a flaw of extremes[32] and layers unnecessary "cushion" onto the taxpayer's financial statements.
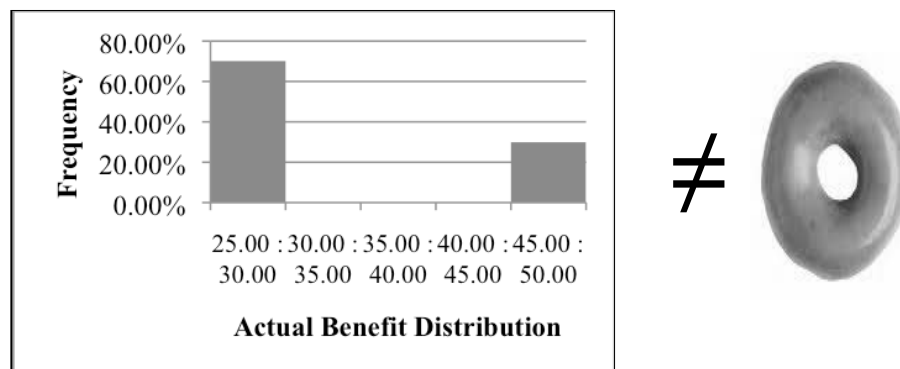
When the tax matter is ultimately settled with the taxing authorities, assuming the weighted average is achieved, the accountants will reverse the reserve and credit the income statement for the $36x. In many cases the MLTN source of the flaw of extremes causes nothing more than a time shift in income statement items, with an overly conservative starting point. It is unclear how this would be helpful to the user of financial statements.

Two similar issues were considered in the literature regarding

---

[30] *Id.* § 740-10-25-6.

[31] *Id.* In applying this criteria: (1) it is presumed the tax position will be audited and the taxing authority has full knowledge of the facts and relevant information, (2) the determination is made based upon reference to sources of authorities in the tax law or widely know administrative practice, and (3) each position is evaluated on its own merits. *Id.* § 740-10-25-7.

[32] *See* SAVAGE, *supra* note 3, at 133–36 (illustrating the same type of flaw for a business unit budgeting scenario).

accounting for bad debts and contingent legal claims.[33] Interestingly, prior to promulgation of FIN 48, uncertain income tax positions were governed by FASB Statement No. 5. That statement provides that "estimated loss from a contingency be accrued by a change to income if it is probable that a liability has been incurred and the amount of the loss can be reasonably estimated." FASB's standards do not supply a number or range of values on its likelihood continuum. In practice the term "probable" has been interpreted to mean 70%–75% and some texts reflect a slightly higher percentage of 78%.[34] Under FASB Statement No. 5 a requirement for potential losses due to legal claims would not be booked if the likelihood of prevailing was only 35%. The byproduct of applying this standard is the reverse of the FIN 48 example above, which arguably understates the potential liability.

So where do we go from here? One approach is for companies to support the U.S. Securities and Exchange Commission's (SEC) consideration of convergence to International Financial Reporting Standards (IFRS).[35] Under that strategy firms might seek to influence the rulemaking process to reduce/eliminate the flaw of extremes embodied in FIN 48's recognition threshold. From a tax perspective many U.S. manufacturing firms have been concerned about convergence to IFRS since International Accounting Standard (IAS) 2, as revised in 2003, eliminated the use of last-in-first-out (LIFO) for determining the cost of inventories on the basis that it is not a reliable reflection of actual inventory changes. Under the U.S. tax rules taxpayers may only use LIFO if they use LIFO to report financial results to partners, stockholders, etc. and for credit purposes.[36] This can result in material changes in financial statement position for some firms. For example, based upon their filings with the SEC, Caterpillar Inc.'s inventory value on December 31, 2009 would be $9,363 (in millions) under first-in-first-out (FIFO) inventory accounting as

---

[33] Sam Savage & Marc Van Allen, *Accounting for Uncertainty: When the Only Thing Certain Is the Date*, J. PORTFOLIO MGMT., Fall 2002, at 31; Sam Savage, *Some Gratuitous Inflammatory Remarks on the Accounting Industry*, 4 J. FORENSIC ACCT. 351 (2003) (addressing the bad debt issue).

[34] WANDA A. WALLACE, AUDITING 955 (Thomson South-Western College Publishing, 3d ed. 1995).

[35] Information on the SEC's roadmap for convergence and related information can be located on their website. *See Archived Information: Global Accounting Standards*, U.S. SECURITIES AND EXCHANGE COMMISSION, http://www.sec.gov/spotlight/ifrsroadmap.htm (last visited Mar. 17, 2011).

[36] I.R.C. § 472(c).

opposed to $6,360 (in millions) under LIFO.

IFRS treatment of tax uncertainties may produce a result that is more reflective of reality. It remains an open question of whether that will entice support for convergence. To date it has not. One method of addressing uncertain tax positions would be to follow IAS 37R, which allows one to look to the amount the entity would rationally pay at the measurement date to relieve itself of the liability. Under this approach one would accrue the lowest of: (1) the NPV of resources need to satisfy the obligation; (2) the amount paid to extinguish the obligation; and (3) the amount paid to transfer the obligation. The present value in this context may be the probability weighted average of anticipated cash payments for all expected outcomes. To the extent convergence does not become a reality, firms need to consider methods to demonstrate to the FASB the current rules are ineffective.

C. The Portfolio Effect

"When uncertain numbers are averaged together, the distribution of the average goes up in the middle and down on the ends, becoming more centralized. This centralizing of the distribution is the primary manifestation of diversification."[37]

A similar effect is seen where the shape of uncertain numbers is added together to form a portfolio of positions, including income tax positions. Since FIN 48 requires each unit of account be considered and evaluated separately and the MLTN recognition standard applied for each unit of account, the tax accounting rules negate the ability for one to recognize a benefit associated with the portfolio effects inherent in managing multiple positions. A similar issue exits under FASB Statement No. 5.[38] Based on this construct limitation, this paper does not address the manner in which a taxpayer might knowingly select uncertain tax positions to maximize its expected return (tax reduction) and minimize variance through diversification in the fashion discussed in the non-tax context.[39] The author believes such is feasible outside of the FIN 48 rubric when one examines the cash-tax impact of uncertain positions, as opposed to their initial income statement treatment under FIN 48. Exposition on the topic would be highly dependent upon the technical aspects of the tax statutes, regulation, and guidance, as applied to various particular fact patterns.

---

[37]   SAM SAVAGE, DECISION MAKING WITH INSIGHT 40 (Thomson South-Western College Publishing, 2d ed. 2003).

[38]   Savage & Van Allen, *supra* note 33, at 34.

[39]   *See* Harry Markowitz, *Portfolio Selection*, 7 J. FIN. 77 (1952).

For purposes of illustrating the portfolio effects of uncertain income tax positions were one not burdened with FIN 48, assume a firm has ten positions of the type described in the prior example (perhaps it takes the same position in ten different states). In each case it has a 70% chance of sustaining $30x and a 30% probability of sustaining $50x. Simulating the potential outcomes of all ten cases combined for 1,000 trials reflects a potential average benefit of $359x, with a 25% likelihood of achieving $340x or less, and a 25% likelihood of securing $380x more of benefit. Adding these independent uncertainties together for the ten positions, with the same individual distributions, allows us to see the impact of diversification. The likelihood of only sustaining $300x in total is the same as every case settling at $30x, or $.7^{\wedge 10} = 2.8\%$. Similarly, the likelihood of sustaining $500x in total is the same as every case settling at $50x, or $.3^{\wedge 10} = .00059\%$. But, there are numerous potential combinations in-between these extremes which is why the histogram of the distribution peaks. Yet, since the firm does not meet the MLTN threshold for recognition it may not record any benefit for any of the income tax positions under FIN 48.
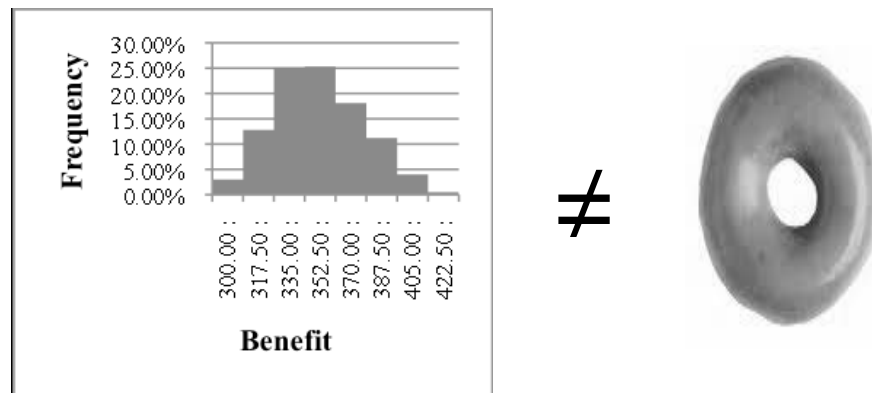
In fact the firm must establish a reserve for $1,000x, a position that reflects a complete loss on each case. This result, while perhaps an extreme example, demonstrates the significant impact FIN 48's embedded flaw can have on a company's financial statements. In the author's opinion, there is no question a regime which can lead to such situations provides little incremental utility to investors.

D. Simpson's Paradox in Risk Assessment

Simpson's Paradox is yet another example of the flaw of averages. We see it, or in most cases fail to identify it, when our uncertain numbers depend upon hidden data traits. Specifically, Simpson's

Paradox "occurs when the direction of an association between two variables is reversed when a third variable is controlled."[40] This flaw has the potential to arise in at least two key U.S. income tax accounting areas related to uncertain tax positions: evaluating state income tax look back policies and examining outside counsel opinions and experience. The paper addresses each of these from a practical perspective. A concrete illustration of Simpson's Paradox is provided first to supply the reader with conceptual familiarity.

Perhaps the most infamous example of Simpson's Paradox concerns the 1970s University of California, Berkeley (Berkeley) sex bias case. Berkeley was sued for bias against female applicants to the graduate programs. The admissions data for 1973 reflected that male applicants had a greater chance of gaining admittance than females; and, the conjecture was that this was not due to mere chance. The figures are:

	Applicants	*Percentage Admitted*
Males	8,442	44%
Females	4,321	35%

The aggregation of the admissions data failed to reveal that generally when examined on a departmental basis Berkeley actually appeared to have a bias towards admitting females. In four of the six departments evaluated females actually had a higher rate of admission than males. The Department details are as follows:

Department	*Male Applicants*	*Male % Admitted*	*Female Applicants*	*Female % Admitted*
A	825	62%	108	82%
B	560	63%	25	68%
C	325	37%	593	34%
D	417	33%	375	35%
E	191	28%	393	24%
F	272	6%	341	7%

[40] Christopher H. Morrell, *Simpson's Paradox: An Example from a Longitudinal Study in South Africa*, J. STAT. EDUC., Nov. 1999, *available at* http://www.amstat.org/publications/jse/secure/v7n3/datasets.morrell.cfm.

Research into this area revealed that males applied more frequently to less-competitive departments with high rates of admission whereas females more frequently applied to more competitive departments with lower rates of admission.[41] The key learning here is that there may exist a confounding variable that is not apparent when data sets are aggregated and then evaluated.

1. State Income Tax's Widely Known Administrative Look-Back Policy

In tax accounting, Simpson's Paradox may occur when one relies on widely known administrative practices of taxing authorities, and general information from service providers, to establish the tax reserves. For example, when a company has not filed a return for a jurisdiction the statute of limitations for assessment and collection does not expire and the company must evaluate its nexus position: whether it has sufficient contacts to subject it to tax there. Under the U.S. accounting rules the company may consider whether the state has a widely known administrative practice of limiting the number of years of audit to a specified number.[42] Specifically, where past taxing authority administrative practices and precedents in dealing with the entity or similar ones "are widely understood, for example, by preparers, tax practitioners and auditors, those practices and precedents shall be taken into account."[43] The company may understand in the context of nexus disputes based on its own experience, or most likely a representation for an accounting or law firm, that Jurisdiction A will look back only five years in determining if a tax return and deficiency are due. The company may conclude based upon the facts and circumstances that it is MLTN a tax return is not due for more than five years and that a liability for tax exposures for prior years in not required.[44]

For example, in conversation with one consulting practice regarding State Z it was suggested to the author that Z's look-back was five years on average; and, that as the dollars at issue increased per year the number of look-back years decreased since Z was concerned about "getting cash in the door" and "not engaging in

---

[41] P.J. Bickel, E.A. Hammel, & J.W. O'Connell, *Sex Bias in Graduate Admissions: Data from Berkeley*, 187 SCI. 398 (1975).
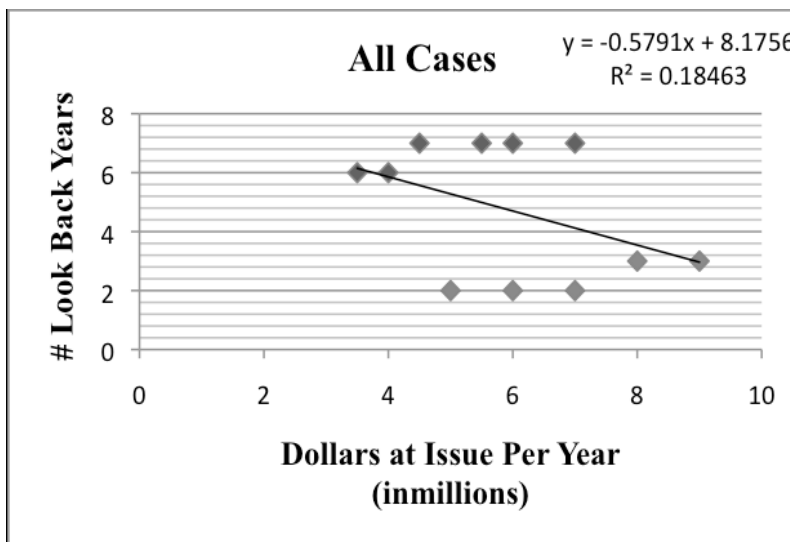
[42] ACCOUNTING STANDARDS CODIFICATION § 740-10-25-7(b) (Fin. Accounting Standards Bd. 2009).

[43] *Id.*

[44] *Id.* §§ 740-10-55-94 to -95.

protracted disputes." The firm did not initially provide any detail behind the five year figure or trending assumption. Upon request the following table of sanitized data was furnished, for which a linear best fit was determined by the author. The coefficient of determination, $R^2 = .18$, was computed based upon the square of the correlation coefficient between the firm's reported data points and predicted values.

The low coefficient of determination reflects little of the variation in the response variable is likely explained by the explanatory one. Almost 80% of variation may be attributable to unknown items.

| Dollars at Issue (in millions)	Look-Back Years
$3.5	6
$4	6
$4.5	7
$5.5	7
$6	7
$7	7
$5	2
$6	2
$7	2
$8	3
$9	3

A follow-up conversation was had with the firm at which time it

was determined both tax aggressive cases (i.e., tax shelters) were grouped together with non-tax shelter cases. The average number of look-back years provided by the firm for shelter and non-shelter cases was 6.66 (6–7 years) and 2.4 (2–3 years), respectively. This suggests it indeed makes a difference whether the company falls into one category vs. the other. Five years on average is not particularly helpful or equal to the average of either sub-category. It should be noted what was provided here was an average number of look-back years per dollar amount at issue. The same provisos and concerns regarding the use of average values equally applies with respect to those data points too.

The data sets for those different populations were segregated and a linear best fit was prepared for each of them. The R^2 for the tax shelter and non-tax shelter cases equaled .61 and .75, respectively. So, a material portion of variance in the response variable could be explained by the explanatory variable. The details paint a very different picture than the original information provided by the firm. This example reflects how Simpson's Paradox can and does exist in a very key area of tax accounting. Where one is provided with aggregate information in the tax context, e.g., a single number of look back years, with a suggestion regarding trending, consideration needs to be given to teasing out more detail in the data set to examine whether the information is faithful to underlying trends. The point is to provide the user with more information that will inform judgment and lift potential clouds of confusion as were present in this example.
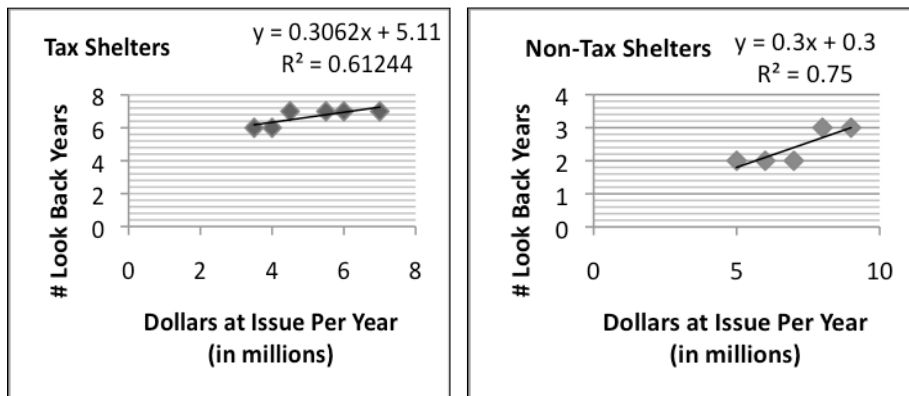
2.   Examining Outside Counsel Opinions and Experience

Another area Simpson's Paradox may occur in income tax accounting concerns the measurement of the uncertain tax benefit to be booked. Where the MLTN recognition threshold has been satisfied

the amount of the benefit to be booked is the greatest amount for which it is more than 50% likely of being realized upon settlement with the taxing authority which has full knowledge of the facts and circumstances.[45] Accordingly, the rules adopt a cumulative probability approach that requires one to assign probabilities to potential outcomes.[46] Past audit experience may be considered in this context.[47] The experience of outside service providers frequently influences managements' view as to at what dollar amount it is willing to settle a matter.

From a practical perspective companies consider a variety of data points including their own experiences and the experiences of outside law firms and accounting firms in resolving similar issues. It is common on material issues for companies to solicit input from multiple firms on their prior audit experiences and sustention rates. In addition, the companies may use this information as a basis for selecting their service provider in the tax controversy context. Some service providers are most likely to provide sustention percentages only, with little to no additional details. Therein lurks the potential for Simpson's Paradox to rear its head.

Assume one is gathering data points from two firms, A and B, to determine the amount of benefit to book on a tax matter and who to hire. What if Firm A reports they have dealt with the issue twice, on average sustaining 71.75% for their clients (75% on case 1 and 68.5% on case 2)? What if Firm B reports they too have dealt with the issue twice sustaining 70.95% on average (74% on case 1 and 67.9% on case 2)? Firm A looks slightly better, right? Not necessarily. In this context it might be helpful to have a sense of the relevant magnitude of the different tax disputes. How much was at issue in each case? Suppose the detail was as follows (all dollar amounts in 000s):

---

[45] *Id.* § 740-10-30-7.

[46] *Id.* §§ 740-10-55-102 to -104 (containing examples which illustrate the cumulative probability measurement approach).

[47] *Id.* §§ 740-10-55-102 to -107 (illustrating concept of cumulative probability in the measurement examples).

	Case 1 (Sustention)		Case 2 (Sustention)		Average of the Averages	The Weighted Average[48]	
Firm A	$108/ $144	75%	$1,197/ $1,746	68.5%	71.75%	$1,305/ $1,890	69%
Firm B	$912/ $1,233	74%	$285/ $420	67.9%	70.95%	$1,197/ $1,653	72.4%

Having the dollar figures and evaluating the weighted average for the firm's performance might be more informative. Understanding who performed stronger on larger cases might also be helpful. Looking at the weighted averages rather than the average of the averages, Firm B performed almost 3.5% better than Firm A; while the average of the averages suggested A was the stronger firm. How one utilizes this information and how it informs judgment will vary from company to company. This case illustration contains a modest sustention percentage differential between the two firms to illustrate a point. The difference may of course be more pronounced in other fact patterns. The potential existence of Simpson's Paradox in this context may provide companies with murky information. Asking service providers for sanitized data of the type displayed above, with taxpayer identifiers removed but further granularity, is a sound approach to getting a better base-line for decision making. This approach would not of course reveal any unique factors such as whether other issues, potentially sensitive ones from the taxing authority's perspective, were horse-traded with the reported issue and inquiry should be made to understand the full context of the resolution.

Before leaving this topic it is worth noting that FIN 48's measurement framework has the tendency to deviate from the weighted average approach. Suppose one evaluates an income tax return position for which it MLTN to be sustained on the technical merits and the probability distribution looks like the following based upon past experience, weight of precedent in the taxpayer's favor, the firms' willingness to litigate the issue based on outside counsel's experience and advice:

---

[48] For a comparable example in the field of athletics, upon which the instant example figures were modeled, see KENNETH ROSS, A MATHEMATICIAN AT THE BALLPARK: ODDS AND PROBABILITIES FOR BASEBALL FANS (2004).

Amount of the "As Filed" Tax Benefit Sustained	Individual Probability of a Particular Outcome	Cumulative Probability that the Tax Position Will be Sustained
$100x	30%	30%
$75x	15%	45%
$65x	15%	60%
$50x	40%	100%

In this scenario the taxpayer would recognize a benefit of $65x for financial statement purposes since it is the greatest benefit amount more than 50% likely to be sustained. The benefit that would have been recorded under a weighted average approach is $71x (.3 * $100x + .15 * $75x + .15 * $65x + .4 * $50x), $6x greater than what the FIN 48 construct would have allowed. It is difficult to definitively conclude which approach yields a more reflective result. The FIN 48 method has some surface appeal, since the matter may only be resolved one time and if the discrete distribution is accepted that resolution should fall on one of those points not an aggregation thereof. Companies with an eye toward convergence to IFRS should carefully consider how their current and future distributions are constructed with the highlighted difference in mind since the IAS 12 approach leaning on IAS 37R may reflect aspects of a weighted average point estimate method.

E. Scholtes Revenue Fallacy in Intercompany Relationships

1. Case Illustration

Stephan Scholtes, of the Judge Business School at the University of Cambridge, has identified yet another form of the flaw of averages, the Scholtes Revenue Fallacy. This flaw was identified in the context of banking and projected revenues, where a bank when using average values for estimation purposes for future balance growth shows a profit but on average loses money on each account.[49] The flaw is illustrated in the following table.[50] This example is driven by lower margins on higher balances when compared to the margins on lower balances.

---

[49] SAVAGE, *supra* note 3, at 142–43.

[50] Reproduced verbatim from SAVAGE, *supra* note 3, at 143, Table 19.1.

Profit of Average Account is $11, but on Average You Lose $5				
	Balance	*Margin*	*Net Revenue*	*Profit after Overhead*
High Balance	$1,000	2%	$20	($5)
Low Balance	$200	10%	$20	($5)
Average	$600	6%	$20	($5)
Flawed Average Calculation Based on Average Margin and Balance				
	$600	6%	$36	$11

This example assumes an overhead cost of $25 per account.

In the tax context the same flaw may exist in projecting future revenues with potentially perilous results. For example, where two related parties (defined here as wholly owned subsidiaries of a common parent) engage in the same trade or business and one serves as the sales agent for the other a very similar fact pattern arises. In that case the margins are typically tiered and structured as sales commissions such that lower transaction amounts receive a higher commission percentage, and higher transaction amounts receive a lower commission. Since the parties are related, the seller will generally be allocated some portion of general and administrative (G&A) costs at a fixed amount per transaction. Using the same values from the table above, in this context one would project a profit on average whereas each transaction would actually be projected to lose money. Where the seller is carrying NOLs from prior years this can be a concern from an income tax accounting perspective.

U.S. GAAP requires a reduction in the measurement of deferred tax assets, including NOLs, not expected to be realized.[51] Evaluation of this matter requires consideration of all positive and negative evidence to determine whether based upon the weight of the evidence a valuation allowance is required.[52] A valuation allowance is recorded if based on the judgment of management it is MLTN (i.e. a probability of more than 50%) that all or some portion of the deferred tax assets will not be realized. The MLTN threshold presents its own flaw of averages of the type discussed herein concerning the FIN 48

---

[51] ACCOUNTING STANDARDS CODIFICATION § 740-10-30-16 (Fin. Accounting Standards Bd. 2009).

[52] *Id.* § 740-10-30-17.

recognition threshold for uncertain income tax positions. The valuation allowance shall reduce the deferred tax asset to the amount that is MLTN to be realized.[53] As part of this analysis past performance is evaluated as part of an assessment of likelihood of future profitability. Similarly, projections of future income are examined to determine if there will be sufficient income to absorb the historic NOLs.[54]

In tax as in banking it is not uncommon to use average values for projections of future profitability. Doing so in this context might present a picture of potential loss utilization that is not entirely consistent with what one actually should anticipate. It could have the unintended result here of not recording a valuation allowance when one is required, or recording one for an amount lesser than what is required. This could have an impact on the firm's income statement. In conducting valuation allowance analysis for tax, projections regarding future profitability should be made not based upon averages; but, by developing meaningful distribution strings in the modeling context and potentially conducting Monte Carlo simulation which will reveal these flaws and provide more meaningful information for the business regarding likelihood of different outcomes. The models developed can then be re-evaluated and changed as appropriate.

2.   Corollary: The Even-Steven

There are likely a number of different variations of the Scholtes Revenue Fallacy. One of them appears in state and local taxation. In the United States some states require the filing of separate tax returns on a legal entity basis. Where an entity conducts business in a separate filing state, or has sufficient contacts in that state such that it has taxing nexus with the state, it must file a legal entity tax return with the state. In these cases getting intercompany pricing right can have a

---

[53]   *Id.* § 740-10-30-5(e); *see also* PRICEWATERHOUSECOOPERS LLP, *supra* note 28, § 5.1.

[54]   From a technical Accounting Standards Codification Topic 740 perspective, future projections of income standing alone are not a sufficient indicator to reach the MLTN threshold regarding attribute utilization. Section 5.1.3.1 of PriceWaterhouseCoopers's guidebook addresses this notion stating in pertinent part: "A projection of future taxable income is inherently subjective and generally will not be sufficient to overcome negative evidence that includes cumulative losses in recent years, particularly if the projected future taxable income is dependent on an anticipated turnaround to operating profitability that has not yet been demonstrated." PRICEWATERHOUSECOOPERS LLP, *supra* note 28.

significant impact for tax purposes. For example, consider a business where A, which is only subject to tax in state Y (a combined state where it files its tax return with B), and B, which is only subject to tax in state Z (a separate filing state), are related parties. Assume A contracts with B to sell its goods in state Z on a commission basis and there are only two products: one that sells for $1,000 and one that sells for $500. Given a 10% commission on the lower sales ticket of $500 and a lower commission of 5% on the higher sales ticket of $1,000, B makes $50 on each transaction. But, this does not include A's G&A allocation to B. If there is an allocation of $50 per transaction there is no profit on either the high or low sales ticket transaction. Yet, on average, using the average commission and transaction amounts, B is profitable. This scenario is illustrated below, and is referred to as the Even-Steven.

Profit of Average Transaction is $6.25, but on Average You Break Even					
	Transaction Amount	*Commission*	*Net Revenue*	*G&A per Transaction*	*Profit after G&A*
High Sales Ticket	$1,000	5%	$50	$50	$0
Low Sales Ticket	$500	10%	$50	$50	$0
Average	$750	7.5%	$50	$50	$0
Flawed Average Calculation Based on Average Commission and Transaction Amount					
	$750	7.5%	$56.25	$50	$6.25

This fact pattern arguably to some produces a good result for B, no income tax in state Z. And since B is not generating a loss, it does not have to address whether it has a deferred tax asset potentially subject to a valuation allowance. A does not pay incremental income tax on the intercompany transaction since A only files returns in state Y (a combined filing state) and the A & B intercompany transactions wash in their consolidation. B also thinks to itself, "hey on average we project we'll be profitable." The Even-Steven is a potential trap taxpayers might fall into. Organizations considering this or those running into perpetual losses due to intercompany transactions, should be aware that most states conform to the federal law which

provides that where related parties engage in intercompany transactions, the Secretary "may distribute, apportion, or allocate gross income, deductions, credits, or allowances between or among such organizations, trades, or businesses, if he determines that such . . . is necessary in order to prevent the evasion of taxes or clearly to reflect the income of any of such organizations, trades, or businesses."[55] Whether the seller should be in a position to make a profit in this scenario or whether it is adequate for it to merely break even for a period of years and generate profits in later periods, is a question of fact for careful consideration.

IV. CONCLUSIONS

Use of Monte Carlo simulation constitutes a critical tool for firms seeking to prudently manage estimated income tax requirements and their overall cash flows. This is particularly true where non-linearities or the flaw of averages are embedded within one's income tax posture. This paper explores cash-tax implications of the flaws of averages regarding uncertain levels of receipts, utilization of tax attributes — which may impact one's effective tax rate, and the double-whammy of over or under paying one's estimated taxes. These examples by no means reflect an exclusive list of the cash-tax flaws of averages. There are bound to be others.[56] However, the techniques illustrated in the examples herein furnish the reader with a potential construct for meaningfully managing estimated taxes based on one's unique risk profile and management approach. These tools may have the potential to bolster firm value by informing more efficient use of funds and are superior to simple point estimates based upon average values.

The more severe tax flaws of average examined in the income tax provision context bear lesser opportunity for immediate and material remediation. A change in the analytical framework for income tax accounting would be necessary to achieve that, such as a wholesale revision to the FIN 48 recognition and measurement standard and MLTN valuation allowance standard. However, this paper does identify several specific flaws of which the reader should be aware; since, in some instances a portion of the flaw may be ameliorated by

---

[55] I.R.C. § 482.

[56] *See, e.g.,* SAVAGE, *supra* note 3, at 132. In providing a top-11 list of flaws of averages the author provides: "The twelfth of the Seven Deadly Sins is being lulled into a sense of complacency, thinking you now know all of the insidious effects of averaging." *Id.*

2011]   *The Flaw of Averages in U.S. Corporate Income Taxes*   661

mere identification and securing better information.