Ahead by a Century: Tim Edgar, Machine-Learning, and the Future of Anti-Avoidance

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INITIAL DRAFT: February 1, 2019

ABSTRACT: Tim Edgar's contributions to our collective thinking about tax avoidance are ahead of their time. This paper contextualizes Edgar's contributions and argues that it is only once a tax system has been sufficiently specified that Edgar's view, which he develops in 'Building a Better GAAR' (2008), that tax avoidance is properly regarded as a negative externality has purchase. The challenge for Edgar's view in the current environment, however, is that the world's tax (and legal) systems of the early 21st century are not specified sufficiently and can only be regarded, even optimistically, as a rough cut at a second-best. As a consequence, the credibility of the view that tax avoidance should be viewed as a negative externality solely to be minimized is, for at least the time being, far from clear cut. The paper suggests that the remainder of the 21st century will witness our tax systems gradually moving toward a much-improved specification of tax law. As we make progress in doing so, Edgar's most important anti-avoidance considerations will be vindicated.

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NB: the current draft on file with the author is not in a form suitable for circulation; therefore, attached instead is a recent piece of mine from Bloomberg on machine learning and the economic substance doctrine that forms the motivation for much of part 4 of the paper.

Bloomberg Tax

Daily Tax Report®

INSIGHT: Turning Standards into Rules Part 4: Machine Learning and Economic Substance

BY BENJAMIN ALARIE

Owing to the fact that many legal questions can be framed as binary classification problems, there are enormous possibilities for applying predictive algorithms to the law. Building on recent advances in machine learning, my colleagues and I at the University of Toronto have created a system that analyzes patterns in the case data for a range of tax law questions. As cases are inputted into the system to form a data set, the machine learning develops an algorithm that, after testing and calibration, can predict how the courts are likely to rule in a new scenario. Each prediction is also accompanied by a confidence level expressed as a percentage.

Our system also allows us to observe how changing the fact pattern of a case affects the probability of the outcome. In Part 2 of this series, we investigated how the presence of financial risk factors significantly alters our algorithm's confidence in determining whether financing is debt or equity. In Part 3, we explored how different behavioral control factors affect the likelihood of finding that a worker is an employee and not an independent contractor.

In this article, we'll see how machine learning handles a much more complex tax question: does a transaction undertaken by a taxpayer as part of its business, trade, or income-earning activity have economic substance?

The Economic Substance Doctrine and the Legal Test

The federal tax code states that in order for a transaction to be recognized for tax purposes, it must pass a two-pronged test (Section 7701(o)(1)):

(1) Economic effect: It must change ''in a meaningful way (apart from Federal income tax effects) the taxpayer's economic position.''

(2) Substantial purpose: The taxpayer must have a ''substantial purpose (apart from Federal income tax effects) for entering into such transaction.''

If a transaction has no purpose or effect beyond generating tax savings for the parties involved, it lacks economic substance. The Internal Revenue Service will collect the taxes as though the transaction hadn't occurred and will impose a penalty of 20 percent of the disallowed benefit. This penalty may be increased to 40 percent in cases of blatant fraud (Sections 6662(b)(6), 6662(i)(1-2)).

Although the two-pronged test outlined in the statute provides general guidance, courts primarily use a multifactor common law test when trying to determine whether the economic substance doctrine applies to a particular transaction. For our machine learning system, we selected the factors most commonly mentioned in the leading cases, as well as many of those listed in the IRS 2011 directive on the economic substance (''Guidance for Examiners and Managers on the Codified Economic Substance Doctrine and Related Penalties''). When the system was calibrated and tested, we found that some factors had more influence on outcome than others. In the past, tax advisors had to rely on their intuition to determine how judges might assign weights to different factors and how these factors might be applied in future cases. By applying machine learning, we can augment professional intuition with concrete predictions.

In this piece, we will explore how changing different factors in existing cases affects the likely outcomes. We will explore the following three factors:

(1) The flexibility of the transaction,

 ISSN 0092-6884

(2) Expectation of pre-tax profits, and
(3) Unnecessary transaction costs.

(1) Flexibility of the Transaction: Negotiation and Choice Let's begin by looking at questions that relate to the flexibility of the transaction:

■ Did the taxpayer negotiate a favorable change in price or obligations?

■ Were any of the entities in the transaction prevented from having a choice as to how to use the cash (or cash equivalents) they received?

In determining whether a transaction has a substantial and legitimate business purpose, courts often look for evidence that the taxpayer attempted to negotiate a better deal. Sham transactions—transactions that have no purpose other than reaping tax benefits—tend to depend on fixed, predetermined prices in order to produce the anticipated tax savings. Negotiating a more favorable price suggests that the transaction is flexible and that the taxpayer is motivated by profit, both of which point toward economic substance. Sham transactions also frequently involve carefully planned circulation of money between entities. This means that some of the parties involved have no say over the use of the cash (or cash equivalents) that they receive.

Intuitively, negotiation and choice would seem to be very important factors. But how much of an impact do they have? Under what circumstances are these factors decisive?

In *85 Gorgonio Wind Generating Co. v. Commissioner*, the taxpayer partnership purchased two wind turbines and made a deal to have the turbines installed and operated in a wind park owned by another company. The deal resulted in a loss, and the taxpayer claimed substantial depreciation, investment, and energy tax credits. The IRS challenged the claim, but the Tax Court ruled that the transaction had economic substance. The court noted in particular that the partnership had negotiated a backup agreement with the wind park owner to receive revenue regardless of the profitability of the wind turbines. There was also no indication that either party lacked control over the use of the money that they received in the transaction.

Inputting the facts of this case into our system yields a prediction that aligns strongly with the court's finding of economic substance. What would have happened, however, if the taxpayer hadn't negotiated a more favorable deal with the owners of the wind park?

We can re-compute the scenario using the same facts as *85 Gorgonio*, but with no negotiation. Here, our system still generates a prediction of ''economic substance.'' The probabilistic likelihood of this answer, however, falls by about 8 percent. Even if one of the parties hadn't been able to choose what to do with the money it received, the probabilistic likelihood would only drop by another 8 percent. Taken together, of course, that's a significant decrease. But our machine learning algorithm shows us quite clearly that neither of these two factors has sufficient weight to change the predicted outcome in this particular case. The other facts still weigh in favor of a finding of economic substance.

(2) Economic Effects: Expectation of Pre-Tax Profits The next factor we'll examine relates to the economic effects of the transaction: does the taxpayer expect pre-tax profit from the overall transaction?

The tax code includes a special rule that applies when a taxpayer attempts to defend the legitimacy of a transaction by arguing the existence of profit potential. Profit potential should only be taken into account, the legislation reads, ''if the present value of the reasonably expected pre-tax profit from the transaction is substantial in relation to the present value of the expected net tax benefits that would be allowed if the transaction were respected'' (Section 7701(o)(2)(A)). In other words, the presence of profit alone doesn't prove economic substance. In order to be respected by the IRS, the expected profits from the transaction must be ''substantial'' compared to the tax benefits.

In *Johnson v. Commissioner*, the taxpayer entered into a scheme that involved leasing stamp masters, the photographic color separations used to produce various kinds of stamps. The taxpayer signed a seven-year lease to purchase the masters, which were alleged to be worth over $280,000. In the first two years of the lease, the stamps produced by the taxpayer's masters yielded just $14 in revenue. When the IRS challenged the taxpayer's attempt to claim nearly $50,000 in losses and investment tax credits, the taxpayer claimed that he entered into the transaction with the intent to profit from the sale of the stamps. Even if the transaction itself was a sham, he argued, the profit objective alone entitled him to the deductions. ''This argument,'' the Tax Court judge wrote, ''is without merit.''

Our system agrees: the facts of this case point to an outcome of ''no economic substance'' with 92 percent confidence.

But let's suppose that there really was potential for profit from the stamp masters. Although profits would create a meaningful change in the taxpayer's economic position, as required by the tax code, our system still predicts an outcome of ''no economic substance.'' The probabilistic likelihood of this outcome drops to 77 percent, but there are still enough factors flagging the transaction as a sham to keep the likely outcome as ''no economic substance.''

All tax advisors know that profit is an important factor in economic substance cases. It's no surprise that judges balance evidence of profit potential with other factors. The value that machine learning adds is much more interesting and useful: it allows us to observe the magnitude of the impact of profit potential in a given fact scenario.

(3) Unnecessary Transaction Costs Our final economic substance factor is also the most significant: could the taxpayer have fulfilled the transaction's stated business purpose for a lower amount of transactional costs than what the taxpayer actually paid?

Taxpayers motivated by profit will normally try to minimize transaction costs. As a result, the IRS is more likely to challenge a transaction that features unusually high legal, accounting, or banking fees, unnecessary sales or brokerage commissions, or additional taxes. Excessive fees may indicate that the transaction is one of the many prepackaged schemes marketed to wealthy individuals and corporations as a means of generating tax benefits. These schemes, many of which are now illegal, go by a variety of colorful acronyms such as CARDS, STARS, SILO, BOSS, and Son of BOSS, but they all have the same basic purpose: generating losses and/or qualifying for tax credits.

After digesting the facts of hundreds of cases, our system found a strong correlation between unnecessary transaction costs and outcome. For example, if we look at 50 economic substance decisions going back to 2013, the presence of excessive transaction costs moved our algorithm's confidence level an average of 12 percent in the direction of ''no economic substance.'' Depending on the details of the case, the actual effect ranged from 5 percent to as high as 20 percent. In some borderline cases, altering the facts to include or exclude unnecessary fees was enough to change the likely result.

One important takeaway here is that the impact of this factor depends on the other facts of a scenario. Machine learning—like human judgment—weighs the dynamic relationships between all the facts of a given situation. But machine learning algorithms can quantify these relationships more precisely than human judgment. In doing so, the vague standards that often result in even more vague advice can be defined with greater precision. Ultimately, the use of machine learning algorithms may lead to standards, such as the economic substance multi-factor test, evolving into a series of rules for any given situation.

Looking Ahead

As we've seen from this overview of key economic substance factors, machine learning provides us with a new level of insight into the law. While human lawyers and judges overvalue some factors and undervalue others, machine learning can weigh each factor in relation to how the courts have weighed the facts in hundreds of previous decisions. Not only does machine learning transform our understanding of judicial decision-making, it allows us to predict the outcomes of future cases with unprecedented accuracy.

In the fifth and final article in this series, we'll explore the application of machine learning to the question of whether proceeds from real estate transactions should be taxed as capital gains or ordinary income.

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