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David A. Weisbach

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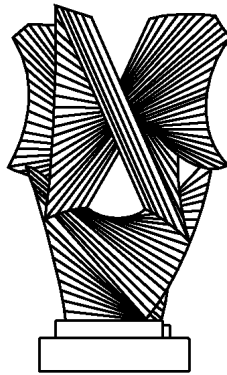
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Line Drawing, Doctrine, and Efficiency in the Tax Law

*David A. Weisbach*

THE LAW SCHOOL  
THE UNIVERSITY OF CHICAGO

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## Line Drawing, Doctrine, and Efficiency in the Tax Law

*David A. Weisbach\**

Doctrinal tax disputes are notoriously messy. Non-tax scholars stay out of the room when the tax geeks start talking doctrine. And tax academics generally do not write serious articles about doctrinal issues. For example, since Professor Plumb summarized the case law on the difference between debt and equity,<sup>1</sup> nobody has touched the subject. There are few substantial articles about the definition of capital gains<sup>2</sup> and none on the difference between independent contractors and employees. Literally dozens of subjects within the tax law are viewed as outside the scope of serious academic discourse. Yet on a daily basis, policymakers in the Treasury, Congress and the courts make decisions on these matters.

Doctrinal disputes in disparate areas of the tax law, in fact, have the same underlying structure: Doctrine is used to draw lines between otherwise similar activities. For example, doctrinal rules determine which of similar financing devices are treated as debt and which are treated as equity, or which of similar service contracts create employment as opposed to independent contractor relationships. Viewed from this perspective, doctrinal rules in

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\* Associate Professor, University of Chicago Law School. I thank David Bradford, Patrick Crawford, Avery Katz, Heidi Feldman, Dan Shaviro, Lynn Stout, and Steve Salop and participants in the Georgetown University Law Center faculty retreat and the NYU Colloquium on Tax Policy and Public Finance for comments.

<sup>1</sup> William T. Plumb, Jr., *The Federal Income Tax Significance of Corporate Debt: A Critical Analysis and a Proposal*, 26 TAX L. REV. 369, 530 (1971).

<sup>2</sup> See Cunningham & Schenk, *The Case for a Capital Gains Preference*, 48 TAX L. REV. 319 (1993), and George Zodrow, *Economic Analysis of Capital Gains Taxation: Realizations, Revenues, Efficiency, and Equity*, 48 TAX. L. REV. 419 (1993) for arguments on whether there should be a capital gains preference, given the definition of a capital gain. There are few, if any, articles discussing the appropriate definition of a capital gain. For one of the few recent examples, see Calvin Johnson, *Seventeen Culls from Capital Gains*, 48 TAX NOTES, 1285 (1990). See also, Stanley Surrey, *Definitional Problems in Capital Gains Taxation*, 69 HARV. L. REV. 985 (1956).

disparate areas of the tax law can be analyzed as a single class of problems, line drawing problems, and are susceptible to solutions with a common structure.

The thesis of this paper is that line drawing in the tax law can and should be based on the efficiency of the competing rules.<sup>3</sup> Doctrinal concerns, such as whether various legal constructs can be fit together, or traditional tax policy concerns, such as whether something is “income” within the Haig-Simons definition,<sup>4</sup> are neither helpful nor relevant to most disputes.<sup>5</sup>

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<sup>3</sup> See discussion *infra* part II I.A.1. for a definition of efficiency as used here.

<sup>4</sup> Under the Haig-Simons definition of income, a taxpayer has income in each period equal to her consumption plus her change in savings. See HENRY C. SIMONS, *PERSONAL INCOME TAXATION* (1938); Robert M. Haig, *The Concept of Income—Economic and Legal Aspects*, in *THE FEDERAL INCOME TAX*, 1, 7 (Robert M. Haig ed., 1921), *reprinted in* READINGS IN THE ECONOMICS OF TAXATION 54 (Richard A. Musgrave & Carl Shoup eds., 1959).

<sup>5</sup> Scholars have previously criticized Haig-Simons income or similar definitions, as inappropriate criteria for resolving tax issues. Professor Boris Bittker made this argument more than 30 years ago in his seminal article, Boris Bittker, *A “Comprehensive Tax Base” as a Goal of Income Tax Reform*, 80 HARV. L. REV. 925 (1967).

Scholars have made this argument more recently as well. See, e.g., Louis Kaplow, *The Income Tax as Insurance: The Casualty Loss and Medical Expense Deductions and the Exclusion of Medical Insurance Premiums*, 79 CAL. L. REV. 1485 (1991); Joseph Bankman & Thomas Griffith, *Social Welfare and the Rate Structure: A New Look at Progressive Taxation*, 75 CAL. L. REV. 1905 (1987); Louis Kaplow, *A Fundamental Objection to Equity Norms: A Call for Utilitarianism*, 48 NATIONAL TAX J. 497 (199\_); Thomas D. Griffith, *Should “Tax Norms” be Abandoned? Rethinking Tax Policy Analysis and the Taxation of Personal Injury Recoveries*, 1993 WISC. L. REV. 1116; Thomas D. Griffith, *Theories of Personal Deductions in the Income Tax*, 40 HASTINGS L. J. 343 (1989); Joseph E. Stiglitz & Michael J. Boskin, *Impact of Recent Developments in Public Finance on Public Policy Decisions: Some Lessons from the New Public Finance*, 67 AM. ECON. REV. 295 (1977); Louis Kaplow, *How Tax Complexity and Enforcement Affect the Equity and Efficiency of the Income Tax*, 49 NATIONAL TAX J. 135 (1996). Instead, they argue scholars should rely on explicitly stated notions of distributive justice.

This paper is consistent with and is based on these works. It adds to these works by focusing on a particular policymaking context, line drawing, and suggesting that line drawing problems have a common structure susceptible to a common solution. The work that is closest to the approach taken here is Daniel N. Shaviro, *An Efficiency Analysis of Realization and Recognition Rules under the*

The underlying structure of the problem is as old as the classical Greek paradox of *Sorites*. If the removal of one grain of sand from a heap still leaves a heap, the paradox goes, so too with the removal of the next grain, and the next, and the one after that. It follows that the removal of all of the grains still leaves a heap. We know, however, that heaps and empty spaces are different, and the challenge is to come up with a justifiable demarcation.<sup>6</sup> We may know that debt and equity are different, capital gains and ordinary income are different, and independent contractors and employees are different, but justifiable demarcations are elusive.

The Greek paradox is about the limits of language, limits that find their way into the tax law (and all other laws). The difference between the pile of sand and lines in the tax law is that there are consequences to the lines in the tax law. That is, in the tax law, the demarcation, the line between essentially identical items, has effects on welfare, particularly the efficiency of the tax system, and the line should be drawn in a way that maximizes welfare.<sup>7</sup>

The approach recommended here is best illustrated by an example, the so-called “check-the-box” regulations.<sup>8</sup> Prior to the check-the-box regulations, the determination of whether an entity was treated as a corporation, subject to the double tax, or a

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*Federal Income Tax*, 48 TAX L. REV. 1 (1992). Shaviro argues that the realization doctrine can be analyzed from an efficiency perspective.

<sup>6</sup> See Frederick Schauer, *Slippery Slopes*, 99 HARV. L. REV. 361, 379 (1985) for a discussion of the Sorites problem.

<sup>7</sup> This, of course, does not mean that the Sorites paradox is solved. The point of the paradox about the limits of language remains correct. Any line we draw will still suffer from the basic problem, but given the limits of language, lines should be drawn as efficiently as possible. For example, we could specify the number of grains of sand and how close together they must be to be called a heap. The specification would still be ambiguous because it uses language, but the specification may make the line between a heap and everything else more efficient (for whatever purpose we are making the distinction).

H.L.A. Hart referred to this problem as the “open-texture” of rules. As Hart stated, “Particular fact situations do not await us already marked off from each other, and labeled as instances of the general rule, the application of which is in question; nor can the rule itself step forward to claim its own instances. In all fields of experience, not only that of rules, there is a limit, inherent in the nature of language, to the guidance which general language can provide.” H.L.A. HART, *THE CONCEPT OF LAW* 126 (2d ed 1994).

<sup>8</sup> Treas. Reg. §301.7701-2 and -3.

partnership, subject to only a single tax, was based on four factors that described platonic notions of partnerships and corporations. For example, corporations were thought to have centralized management, but partnerships were not. Corporations were thought to have unlimited life, but partnerships were not. Business entities with a sufficient number of corporate factors were subject to the corporate tax because they were closer to the platonic notion of a corporation than to the notion of a partnership. In addition, entities with traded equity interests (e.g., stock listed on an exchange),<sup>9</sup> and entities that were actually incorporated under a state law incorporation statute<sup>10</sup> were automatically treated as corporations.

Taxpayers could manipulate the four factors at will—structures were readily available that gave taxpayers the economics of the four factors without being treated as such by the tax law.<sup>11</sup> Typically,

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<sup>9</sup> The publicly traded restriction is found in I.R.C. § 7704. The publicly traded rule was enacted in 1986 in response to the growth of publicly traded partnerships, which, despite the four factor test, were viewed as effective substitutes for corporations. Prior to enactment of the publicly traded test, the distinction between corporations and partnerships was based solely on the four factor test.

<sup>10</sup> The statute, I.R.C. § 7701(a)(3), defines corporation to include associations. The understanding based on this statute is that associations are business entities that are not traditional state law corporations or partnerships. A state law corporation, defined by an actual incorporation, is automatically a corporation for tax purposes. The four factor test was primarily designed to distinguish business associations from partnerships.

<sup>11</sup> If for business reasons, the company had to be actually incorporated or had to have traded equity, then it could not generally avoid corporate status. That is, the real lines under the four factor test were public trading and actual incorporation. *See* JOINT COMMITTEE ON TAXATION, 105 CONG. 1<sup>ST</sup> SESS., REVIEW OF SELECTED ENTITY CLASSIFICATION AND PARTNERSHIP TAX ISSUES 15 (Comm. Print April 8, 1997) (“it could be asserted that, in actual practice, the [four factor test] had come to be so readily manipulated by tax practitioners as to be effectively elective, so that the adoption of an affirmatively elective regime is a change in form rather than in substance from the former regulations.”)

The most important structure used to manipulate the four factor test was the limited liability company (LLC), which was invented in the 1980's. LLC's had most of the economic advantages of corporations, including limited liability for all members, but were treated as partnerships for tax purposes. *See, e.g.*, Rev. Rul. 88-76, 1988- 2 C.B. 360 (holding that a Wyoming LLC is a partnership for tax purposes). The reason taxpayers could achieve these results

taxpayers would set up their organizations to be classified as partnerships rather than corporations because of the lower tax on partnerships. Although taxpayers could achieve their desired tax results, the costs (for example, the changes in organizational structures needed to meet the rules and the fees to accountants and lawyers) were significant in the aggregate.

The check-the-box regulations eliminate the four factor test and move the line between partnerships and corporations to public trading. On a rough basis, an entity is treated as a corporation if its stock is traded. Otherwise it is treated as a partnership, unless it makes an affirmative election to be treated as a corporation, hence the name “check-the-box”.<sup>12</sup>

The argument for abandoning the four factor test is that it merely caused people to shift their organizational structures without collecting any tax. Little tax was collected at great cost. It was enormously inefficient. The check-the-box regulations instead tried to draw a line, public trading, that was more difficult to avoid.<sup>13</sup> It was thought that because fewer taxpayers would change their behavior to avoid the new line, it was more efficient. Even if the check-the-box regulations lose revenue (and they inevitably will lose

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was that the four factors were easily manipulable. For example, continuity of life was present unless the death, insanity bankruptcy, removal, or withdrawal of any member of the organization caused the organization’s dissolution. But the members could agree to refrain for causing a dissolution if one of these events occur, which meant the business entity could effectively continue but not be treated as having continuity of life for tax purposes. *See* Treas. Reg. §301.7701-2(b)(2) (as in effect in 1995).

<sup>12</sup> The only major deviation from this scheme is that the check-the-box regulations retain the rule that state law corporations are automatically traded as corporations. This rule is commonly viewed as an anomaly in the check-the-box world and is thought to have been retained solely because of concerns about the Treasury Department’s authority to change this rule by regulation. *See* sources cited *infra* note 15. The other departure from this rule in the international context where the Treasury listed a number of “per se” corporations. *See* Treas. Reg. §1.7701-2(a)(8). Generally these are entities that could not readily be treated as a partnership under the four factor test because of restrictions on the capital structure imposed by foreign law.

<sup>13</sup> The analysis here ignores the elective element of the check-the-box regulations on the assumption that virtually everyone will choose the partnership structure. Section III below, which applies the efficiency analysis recommended here to a debt, equity problem, considers the effect of electivity.

some), the prior system was such a bad source of revenue that replacing the lost revenue with a better tax should be easy.

Regardless of whether this argument was correct (a subject that will be explored much more below<sup>14</sup>), what is important about the check-the-box regulations is that it dropped traditional doctrinal concerns and instead focused on efficiency. This is a dramatically new, and correct, approach to line drawing.<sup>15</sup>

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<sup>14</sup> See discussion *infra* part II.A.4. There is some indication, however, that the check-the-box regulations lose more money for the government than might have been thought. For example, the check-the-box regulations are a major factor behind recent moves by the Treasury to prevent taxpayers from using so-called hybrid entities. See Notice 98-11, 1998-6 IRB 18; Treas. Reg. §1.904-5T; Notice 98-35, 1998-\_\_ IRB \_\_. A hybrid entity is treated as a corporation for foreign law purposes but uses the check-the-box rules to elect partnership treatment for U.S. purposes. There are many advantages of using hybrid entities. Notice 98-11 and the accompanying regulations were designed to prevent the use of hybrid entities to avoid the anti-deferral provisions of Subpart F.

<sup>15</sup> The check-the-box regulations have produced an outpouring of commentary, although little if any focuses on the efficiency considerations underlying the decision to promulgate the regulations. For a sampling of the commentary on the check-the-box regulations, see Richard A. Booth, *The Limited Liability Company and the Search for a Bright Line Between Corporations and Partnerships*, 32 WAKE FOREST L. REV. 79 (1997); Victor E. Fleischer, "If It Looks Like a Duck": *Corporate Resemblance and Check the Box Elective Tax Classification*, 96 COLUMBIA L. REV. 518 (1996); Jerold A. Friedland, *Tax Considerations in Selecting a Business Entity: the New Entity Classification Rules*, 9 DEPAUL BUS. L.J. 109 (1996); Christopher H. Hanna, *Initial Thoughts on Classifying the Major Japanese Business Entities Under the Check the Box Regulations*, 51 S.M.U. L. REV. 99 (1997); Henry J. Lischer, Jr., *Elective Tax Classification for Qualifying Foreign and Domestic Business Entities Under the Final Check the Box Regulations*, 51 S.M.U. L. REV. 99 (1997); George K. Yin, *The Taxation of Private Business Enterprises: Some Policy Questions Stimulated by the Check the Box Regulations*, 51 S.M.U. L. REV. 125 (1997); Thomas M. Hayes, NOTE: *Checkmate, the Treasury Finally Surrenders: The Check the Box Treasury Regulations and Their Effect on Entity Classification*, 54 WASH. & LEE L. REV. 1147 (1997); Susan Pace Hamill & F. Hodge O'Neal, *Corporate and Securities Law Symposium: Limited Liability Companies and Limited Partnerships: A Case for Eliminating the Partnership Classification Regulations*, 73 WASH. U. L. Q. 565 (1995); John M. Magee, Scott F. Farmer, & Robert A. Katcher, *Reexamining Branch Rules in the Context of Check the Box*, 77 TAX NOTES 1511, (December 29, 1997); Scott D. Smith, *What are States Doing on Check-the-Box Regs?*, 76 TAX NOTES 973, (August 18, 1997); Joni L. Walser &



The example is easily generalized. Tax policy decisions typically require drawing a line between two relatively fixed points, such as the line in the check-the-box regulations between partnerships and corporations. Between the fixed points is a continuous range of transactions. Wherever the line is drawn, transactions on either side of the line will be substantially identical, in the sense that they are substitutes for one another, and taxpayers will change their behavior to take advantage of the line. The tax-induced change in behavior will have efficiency effects. This is true regardless of how arbitrary the line is or how doctrinally complex the subject matter. The thesis of this paper is that given a constraint that a tax distinction between similar activities must be made, the line should be drawn to be as efficient as possible.<sup>16</sup>

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Robert E. Culberston, *Encore une Fois: Check-the-Box on the International Stage*, 76 TAX NOTES 403, (July 21, 1997); Hugh M. Dougan, Lori S. Hoberman, & John W. Harper, *Check-the-Box -- Looking Under the Lid*, 75 TAX NOTES 1141 (May 26, 1997); Reuven Avi-Yonah, *To End Deferral as We Know It: Simplification Potential of Check-the-Box*, 74 TAX NOTES 219 (January 13, 1997); Daniel Shefter, *Check The Box Partnership Classification: A Legitimate Exercise in Tax Simplification*, 67 TAX NOTES 279 (April 10, 1995); Richard M. Lipton & John T. Thomas, *Impact of Final Check-the-Box Regulations Awaits Further IRS Guidance and States' Input*, 14 J. PARTNERSHIP TAX'N 91 (Summer 1997); Payson R. Peabody, *States Generally Endorse Check-the-Box but Key Issues Remain*, 87 J. TAX'N 228 (October 1997); Roger F. Pillow, John G. Schmalz, & Samuel P. Starr, *Simplified Entity Classification Under the Final Check-the-Box Regulations*, 86 J. TAX'N 197 (April 1997); Marc M. Levey, & Richard D. Teigen, *International Implications of Check-the-Box*, 85 J. TAX'N 261 (November 1996); Roger F. Pillow, John G. Schmalz, & Samuel P. Starr, *Check-the-Box Proposed Regs. Simplify the Entity Classification Process*, 85 J. TAX'N 72 (August 1996); Craig W. Friedrich, *The Impact of the Final Check-the-Box Entity Classification Regulations on Real Estate*, 24 J. REAL ESTATE TAX'N 331 (1997); Michael Hirschfeld & Jo-Renee Hunter, *Check-the-Box Regs. Require Planning to Avoid Default Status*, 7 J. INT'L TAX'N 292 (July 1996); Craig W. Friedrich, *One Step Forward--Final Check-the-Box Entity Classification Regulations Issued*, 24 J. CORP. TAX'N 107 (1997); Francis J. Wirtz, *Check-the-Box: The Proposed Regulations on Entity Classification*, 74 TAXES 255 (June 1996); Ann F. Thomas, *Square Wheels: U.S. Pass-Through Taxation of Privately Held Enterprises in a Comparative Law Context*, 17 N. Y. L. SCH.. J. INT'L & COMP. L. 429 (1997).

<sup>16</sup> The most important caveat to the thesis is that we must be willing to adjust the tax rates to achieve the appropriate distributional consequences. That is, the approach taken here is a consequentialist approach and distributional

Section I of the paper begins by showing that the line drawing problem is pervasive in the tax law and gives several examples of line drawing in the tax law that are used throughout the paper. It then shows how traditional theory fails to address the problem. Section II shows how line drawing decisions effect the efficiency of the tax system, develops some intuitions for drawing lines more efficiently, and argues that this is the appropriate criterion for line drawing. Section III gives some examples of the efficiency analysis applied to line drawing problems and Section IV provides a conclusion.

## I. Line Drawing, Doctrine, and Traditional Tax Theory

### *A. Line Drawing in the Tax Law*

The tax law often treats similar activities differently. Selling an asset is treated differently than holding an asset.<sup>17</sup> Debt is treated differently than equity.<sup>18</sup> Independent contractors are treated differently than employees.<sup>19</sup> The basic approach of the tax law is to classify activities through doctrinal rules and distinctions and tax

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concerns matter. The argument made in Section II, however, is that distributional concerns are best dealt with through the rate structure.

The argument does not implicate whether the lines should be drawn through rules or standards or whether lines should be simpler than current law, both of which might be lessons from the check-the-box regulations. Moreover, the argument is not that all decisions in the tax law should be made solely by reference to efficiency. Instead, the argument is that the boundaries of the classifications within the tax law should be set efficiently.

<sup>17</sup> See *Eisner v. Macomber*, 252 U.S. 189 (1920) and I.R.C. § 1001.

<sup>18</sup> See Plumb, *supra* note 1, for a description of the differences. The most important difference is that the return on a debt instrument is treated as interest, deductible to the borrower and taxable to the lender while the return on equity is treated as dividends or capital gain, taxable to the investor but not deductible to the business.

<sup>19</sup> For example, employees are subject to wage withholding but independent contractors are not. See I.R.C. §§ 3401-04. The distinction between independent contractors and employees has been extremely controversial. See Rev. Rul. 87-41, 1987-1 C.B. 296 (identifying 20 factors relevant to the employee/independent contractor distinction); Mason, *Independent Contractor or Employee: The Continuing Controversy*, 75 TAXES 99 (1997).

them according a pattern for the classification.<sup>20</sup> The daily gruel of the tax lawyer is to explain and manipulate these classifications, and, although current classifications are frighteningly more complex than those of earlier law, the role of tax lawyers and tax doctrine has not changed since the creation of the income tax.

The basic structure of these classifications is that there are several known, or fixed points and a continuous range of transactions that fall between them. For example, we know that certain instruments are debt and others are equity, and there is a vast range of instruments between these two poles. We know certain service contracts create employee relationships and others create independent contractor relationships, and there are a large number of intermediate cases. Difficult policy decisions, such as whether an instrument is debt or equity or whether a service contract creates an employee relationship, typically involve transactions in this middle range.

To be sure, many of the “fixed points” can, and potentially should, change. For example, we could eliminate the distinction between debt and equity rather than navigate between these poles. We could treat independent contractors and employees the same. The goal of tax reformers for decades has been to identify and eliminate unsupported doctrinal classifications. Taxing similar activities differently causes behavioral distortions and unfairness, and the complex doctrines needed to draw these distinctions make compliance costly. Reformers argue, therefore, that a broad tax base, one that taxes all forms of income equally, is the fairest, most efficient, and most easily administered tax base.<sup>21</sup>

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<sup>20</sup> One author has referred to the line drawing approach of tax law as the cubbyhole approach. The tax law classifies activities by putting them into various cubbyholes and taxing them according to the rules for the cubbyhole. Edward D. Kleinbard, *Equity Derivative Products: Financial Innovation's Newest Challenge to the Tax System*, 69 TEX. L. REV. 1319, 1320 (1991).

<sup>21</sup> Entire volumes of tax policy research have been devoted to this. *See e.g.*, COMPREHENSIVE INCOME TAXATION (Joseph Pechman, ed. 1977); A COMPREHENSIVE INCOME TAX BASE, A DEBATE (1968) (a series of articles originally published in the Harvard Law Review, republished in book form).

Even fundamental tax reform is likely to leave some line drawing problems. For example, the Hall/Rabushka flat tax proposal treats employees differently than independent contractors. Employees may not deduct the cost of business inputs, such as un-reimbursed employee expenses, but independent

I fully support the goal of a broader, more rational tax base and the scholarship pursuing it. This paper, however, focuses on a more pragmatic issue: how should the policy maker respond to the typical, real life situation of drawing a line between relatively fixed points. Doctrinal distinctions are often deeply embedded in the tax law and are not easily eliminated. Many, such as the realization requirement, are fundamental building blocks of our tax system. Policymakers need guidance in this second-best context which they encounter on a daily basis, where change short of fundamental reform is being considered.<sup>22</sup>

It will be useful to have several examples to use throughout the paper. Two of the doctrinal distinctions most central to our tax system are the realization requirement and the corporate tax, and I will use these as the running examples. It is worth giving some detail on these rules up front. Other examples abound, and Appendix A includes a list of some of the more important doctrinal distinctions in the tax law.

*Realization.* Under the realization requirement, income is not taxed (and losses are not deducted) until the income or loss is “realized.”<sup>23</sup> Although the Code contains no definition, realization

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contracts may. Distinguishing between the two will be problematic. ROBERT E. HALL & ALVIN RABUSHKA, *LOW TAX, SIMPLE TAX, FLAT TAX* 119-122 (1983).

The basic problem is the Sorites problem of distinguish a heap from empty space. Even in cases where there is a principled difference between two items – a heap is really different than empty space – distinguishing between them may be difficult.

<sup>22</sup> The range of alternatives allowed to be considered by the policymaker is central to any analysis. For example, if integration of the corporate and individual taxes is an alternative, then we may not need to worry about the debt/equity distinction or the definition of a corporation (depending on how integration is achieved). The problem of determining the allowable range of alternatives is a standard problem in second-best analysis. For example, the results of the Ramsey analysis, a seminal result in tax policy, change significantly in the presence of an income tax. See Joseph E. Stiglitz, *Pareto Efficient and Optimal Taxation and the New New Welfare Economics*, in *HANDBOOK OF PUBLIC ECONOMICS* 1027-29 (Alan J. Auerbach & Martin Feldstein, eds. 1985). The allowable range of alternatives will vary with the problem and over time, and it is worth studying problems with varying ranges of alternatives.

<sup>23</sup> See I.R.C. § 1001.

generally means the asset producing the income or loss is sold or exchanged. The realization requirement is a bedrock of the existing tax system. It was originally thought to be a constitutional requirement.<sup>24</sup> Although no longer a constitutional requirement, there are only a handful of exceptions to the general rule that realization is required before a taxpayer must report income.<sup>25</sup> While some scholars have suggested the possibility of eliminating the realization requirement (at least in part), the likelihood remains remote.<sup>26</sup>

The scope of the realization requirement is elusive. There is no underlying legal or economic concept one can use as a touchstone. Although we know that some things are treated as sales and some as holding, there is a vast area that falls between the two. Transactions in this indeterminate area must be classified as either selling or holding.

The Supreme Court originally attempted to divide the terrain by defining realization in terms of a “severance” or “derivation” of gain from capital, such that it is received or drawn by the recipient.<sup>27</sup> Severance, however, proved inadequate. For example, the Court held that a lessor has a realization event when it reclaims land upon a

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<sup>24</sup> See *Eisner v. Macomber*, 252 U.S. 189 (1920).

<sup>25</sup> The most important exception is embodied in I.R.C. § 475, which requires securities dealers to measure portions of their income under the Haig-Simons definition. As there is no precise definition of the term “realization,” there can be no precise count of the deviations from the term. For example, the requirement to include interest income before it is paid might be viewed as a deviation from the realization requirement or it might be viewed as simply determining the time of realization. See I.R.C. § 1272-75. Similarly, depreciation allowances may be viewed as exceptions to the realization requirement or not. See Douglas A. Kahn, *Accelerated Depreciation -- Tax Expenditure or Proper Allowance for Measuring Net Income?*, 78 MICH. L. REV. 1, 12 (1979). Whether something is an exception to the realization requirement or not, in the end, has little meaning. It is the substantive law itself that has effects, not views of whether the substantive law is an exception to, or part of, a general rule.

<sup>26</sup> See David Shakow, *Taxation Without Realization: A Proposal for Accrual Taxation*, 134 U. PENN L. REV. 1111 (1986); Fred B. Brown, “Complete” *Accrual Taxation*, 33 SAN DIEGO L. R. 1559 (1996); and David A. Weisbach, *A Partial Mark-to-Market Tax System*, forthcoming, TAX L. REV (and sources cited in note 3 of that article).

<sup>27</sup> See *Eisner v. Macomber*, 252 U.S. 189 (1920).

lease default that includes a building added by the tenant, even though the building is not severable from the land.<sup>28</sup> And lower courts have ruled that “severing” the cash from an asset by borrowing against appreciation does not create a realization event.<sup>29</sup>

An alternative formulation is whether there has legally been a sale, regardless of the economic consequences. A variety of statutes recognize that a formal sale is insufficient to create a realization event, prohibiting, for example, claiming losses from sales to related parties, from wash sales (selling and immediately repurchasing an identical asset), or from other similar transactions.<sup>30</sup> The Supreme Court, however, decided, to the surprise of many, that exchanging economically identical but legally different portfolios of securities was a realization event.<sup>31</sup> The implications of this decision remain uncertain. For example it is not clear whether, outside of specific statutory rules, purely legal formalities control or whether economic substance continues to matter.<sup>32</sup> Regulations addressing the impact of the decision for a single type of transaction are close to 50 pages long.<sup>33</sup>

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<sup>28</sup> See *Helvering v. Bruun*, 309 U.S. 461 (1940).

<sup>29</sup> See *Woodsam Assocs. v. Commissioner*, 198 F.2d 357 (2d Cir. 1952).

<sup>30</sup> See *e.g.*, I.R.C. § 267 (prohibiting taxpayers from claiming losses on sales to related parties), 1091 (prohibiting taxpayers from claiming losses on certain “wash sales”), and I.R.C. § 1092 (prohibiting taxpayers from claiming losses in certain cases when there is identifiable, related gain).

<sup>31</sup> *Cottage Savings Ass’n v. Commissioner*, 111 S. Ct. 1503 (1991).

<sup>32</sup> The uncertainty has spawned a large body of commentary. See, *e.g.*, Loren D. Prescott, Jr., *Cottage Savings Association v. Commissioner, Refining the Concept of Realization*, 60 FORDHAM L. R. 437 (1991); John E. Capps, *In the Wake of Cottage Savings: The Tax Consequences of Debt Modifications*, 72 TEX. L. REV. 2015 (1994); Scott Lenz, *The Symmetry of the Realization Requirement and Its Application to the “Mortgage Swap” Cases*, 9 VA. TAX REV. 359 (1989); Robert Willens & Andrea J. Phillips, *A Road Map Through the Cottage Savings Regulations*, 72 TAX NOTES 765 (August 5, 1996); Richard L. Bacon & Harold L. Adrion, *Taxable Events: The Aftermath of Cottage Savings (Part I)*, 59 TAX NOTES 1227 (May 31, 1993); Richard L. Bacon & Harold L. Adrion, *Taxable Events: The Aftermath of Cottage Savings (Part II)*, 59 TAX NOTES 1385 (June 7, 1993); Richard L. Bacon, *S&L Loan Swaps at the Supreme Court: Ripple Effects*, 49 TAX NOTES 1121, (December 3, 1990); Richard M. Lipton, *The Section 1001 Debt Modification Regulations: Problems and Opportunities*, 85 J. TAX’N 216 (1996).

<sup>33</sup> See Treas. Reg. §1.1001-3.

If legal formalities are not the appropriate rule, one might instead focus on the economics of a sale. A taxpayer might, for example, be treated as holding an asset only if she has the risk of loss and opportunity for gain from the asset. This is consistent with a platonic notion of holding and selling. In some circumstances risk has traditionally been relevant to whether there has been a sale,<sup>34</sup> but implementing this rule on a general basis is a formidable proposition. For example, hedging transactions, in which taxpayers reduce the risk of loss on an asset or business operation, have never been thought to be a realization event.<sup>35</sup>

A final approach might be to look to the underlying reasons for the realization requirement. This might be particularly appropriate for a court or the Treasury Department when interpreting the tax law.<sup>36</sup> The reasons given for the realization requirement are that taxpayers may not be able to determine value of an asset or may not have the funds to pay the tax without a sale.<sup>37</sup> These reasons are all but worthless for making policy because they bear no relationship to current law. For example, traded stock is easily valued and liquid, so the realization requirement should not apply to traded stock. If the realization requirement must apply to stock, the reasons for the realization requirement cannot determine which stock transactions are realization events. One cannot, for example, decide whether a hedge of traded stock or borrowing against appreciation in traded stock should be realization events by reference to liquidity and valuation because, under these norms, we would not have a

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<sup>34</sup> See *Frank Lyon v. Commissioner*, 435 U.S. 561 (1978) (deciding that the nominal lessor was the owner of property under the facts of the case). While not strictly addressing realization, the underlying issue in *Frank Lyon*, who is the tax owner of property, stems from the realization concept.

<sup>35</sup> See *Corn Products v. Commissioner* 350 U.S. 46 (1955); *Arkansas Best v. Commissioner*, 485 U.S. 212 (1988); and *Treas. Reg. §1.1221-2*, for the treatment of hedging transactions.

<sup>36</sup> See Michael Livingston, *Practical Reason, "Purposivism," and the Interpretation of Tax Statutes*, 51 *TAX L. REV.* 677 (1996), for a discussion of statutory interpretation in the tax context.

<sup>37</sup> See DAVID BRADFORD, *BLUEPRINTS FOR TAX REFORM 73* (Tax Analysts, 2d ed., 1984). *Blueprints* adds a third reason, the administrative burden of annual reporting which seems less important given that annual filing is already necessary and that the administrative burden of realization taxation is extremely high.

realization requirement for stock at all. We cannot look to the legislative intent or purpose behind the realization doctrine to decide many of the most basic questions concerning the scope of the doctrine, not to speak of resolving difficult borderline issues.<sup>38</sup>

It might be helpful to look at the most recent change to the realization requirement to get sense of the problem. Prior to this summer, taxpayers could fully hedge the risk of loss and give up the opportunity for gain on stock, and still not be treated as having a realization event. In particular, taxpayers could engage in a transaction known as a “short-against-the-box,” in which the taxpayer who owns stock enters into a short sale of the stock, while technically still holding the original position.<sup>39</sup> Future gain or loss on the short sale exactly offsets future gain or loss on the original stock position, which means the taxpayer no longer has any economic stake in the stock. If value of the stock goes up, the short sale goes down by an exactly equal amount, and if the stock goes down, the short sale goes up, again by an exactly equal amount. The two transactions, however were treated as separate transactions, and that taxpayer did not have to treat the stock as if it were sold.

These transactions looked too much like sales and Congress, therefore, changed to law to treat them as sales.<sup>40</sup> It is not clear, however, that the change in the law was appropriate. The new law moves the line between holding and selling incrementally. The basic, underlying problem, that similar transactions are treated

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<sup>38</sup> For example, the Supreme Court, in *Cottage Savings*, the most significant decision on the scope of the realization doctrine within recent memory, noted that “neither the language nor the history of the code indicates whether and to what extent property exchanged must differ to count as a ‘disposition of property’ under §1001(a).” *Cottage Savings*, 111 S. Ct. at \_\_\_.

<sup>39</sup> In a short sale, the taxpayer borrows stock from a broker and sells the stock. To close the transaction, the taxpayer buys a share of the same stock on the market and delivers it to the broker. If he purchases the stock at less than the amount received from the original sale, the taxpayer makes money, which means the taxpayer wins if the stock price goes down. If he must purchase it at more than the amount received from the sale, the taxpayer loses money. Because the taxpayer makes money if the stock price goes down and loses money if the stock price goes up, a short sale is a perfect hedge for owning stock.

<sup>40</sup> *See* I.R.C. § 1259 and CONF. REP. NO. 220, 105<sup>th</sup> Cong., 1<sup>st</sup> Sess. 512 (1997).



differently, is still there, only now one must stay one step to the left of a slightly different line. The law may not be any less avoidable and is certainly substantially more complex than prior law. It is doubtful that the legislation moves us any closer to a clear definition of the realization requirement.<sup>41</sup> (Section III briefly discusses whether the law is appropriate.)

*The Corporate Tax.* The two-tier corporate tax has been part of our income tax system since its founding. It imposes a higher rate of tax on income from investments in corporate stock than on other investments (in either corporations through a different financial instrument or in non-corporate businesses). While several recent studies recommend elimination of the two-tier tax system, there has never been a strong political push in the United States for doing so. The two-tier corporate tax is likely to be with us for the indefinite future.

The distinction between corporations and partnerships addressed in the check-the-box regulations is an important example of the type of distinctions drawn by the corporate tax. The other major distinction defining the corporate tax base is the distinction between debt and equity. Interest is deductible but dividends are not, so the distinction between debt and equity creates the double-level corporate tax.

The distinction between debt and equity may, if possible, be an even worse morass than the definition of a realization event. The structure of the problem is the same as the structure of the realization problem. There are vast numbers of financing devices that fall between the two simple cases, common stock and fixed-rate, secure debt, and no attempt to distinguish between them has succeeded. The litigated cases are legion, and the court decisions have been aptly vilified as a “jungle”<sup>42</sup> and a “vipers tangle.”<sup>43</sup>

Like the realization requirement, one cannot look to the underlying purpose behind the debt/equity distinction to draw the

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<sup>41</sup> See David A. Weisbach, *Should a Short Sale Against the Box be a Realization Event*, 50 NATIONAL TAX J. 495 (1997), for a summary of arguments with respect to the new law.

<sup>42</sup> Commissioner v. Union Mutual Insurance Co. of Providence, 386 F.2d 974, 978 (1<sup>st</sup> Cir. 1967).

<sup>43</sup> BITTKER & EUSTICE, FEDERAL INCOME TAXATION OF CORPORATIONS AND SHAREHOLDERS ¶4.04 (6<sup>th</sup> ed. 1994).

line. Most scholars believe that there is no justification for the existence of the two-level corporate tax.<sup>44</sup> As Professor Saul Levmore stated, this means that the distinctions drawn in the corporate tax are “arbitrary” and “almost necessarily devoid of normative foundation.”<sup>45</sup> Professor (now Dean) Robert Clark argued that the corporate tax should be understood as the cultural extension of seven essentially arbitrary assumptions.<sup>46</sup> It is difficult, given this lack of normative content for the corporate tax, to determine the appropriate debt/equity boundary by reference to the underlying goals.

We also cannot look to congressional intent to make the distinction. Section 385 of the Code delegates to the Treasury Department the authority to make the distinction and no regulations are (currently) on the books. There is, therefore, little identifiable congressional intent. Courts have been making the distinction since the beginning of the income tax by looking to the meaning of the terms “debt” and “equity” rather than any guidance from Congress on the intended distinction.<sup>47</sup>

The Treasury Department’s experience with its delegated authority to draw the line has not been pleasant. Section 385, delegating authority to the Treasury Department, was enacted in 1969. Proposed regulations were issued 11 years later, in 1980. The saga which followed is lamentable. The regulations were quickly finalized but their effective date was twice extended in the face of criticism. Extensive amendments were proposed in December, 1981, followed by still further extensions of the effective date. Despite this work, investment bankers were quickly able to develop an instrument treated as debt under the regulations, that no court would have treated as debt under prior law, and that the Treasury

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<sup>44</sup> That is, there is no justification for imposing a higher tax rate on stock investments than on other investments.

<sup>45</sup> Saul Levmore, *Recharacterizations and the Nature of Theory in Corporate Tax Law*, 136 U. PENN. L. REV. 1019 (1988). Levmore includes in this argument realization rules. For example, he states “there is, in short, no normative theory or rule that suggests the optimal number or coverage of recognition rules.” *Id.* at 1063.

<sup>46</sup> Robert C. Clark, *The Morphogenesis of Subchapter C: An Essay in Statutory Evolution and Reform*, 87 YALE L. J. 90 (1977).

<sup>47</sup> See the cases cited in Plumb, *supra* note 1.

Department agreed was not debt.<sup>48</sup> With the development of this instrument, all versions of the regulation were withdrawn (before they ever took effect) and the project abandoned. Given the lack of definitive rules and the economic similarity between debt and equity, designing instruments to skirt the border has become one of the most active areas of tax planning.<sup>49</sup>

For example, within the last several years, taxpayers and their advisors developed a security, known as MIPS,<sup>50</sup> that is treated as debt for tax purposes but is treated as preferred stock for essentially all other purposes. The details of MIPS are not relevant here.<sup>51</sup> The basic economics are that they are deductible preferred stock—debt for tax purposes, stock for just about everything else. As they have a significant tax advantage over preferred stock, they have effectively replaced preferred stock in the market place.<sup>52</sup> The question for the Treasury Department is whether it should treat the securities as equity, potentially by using its regulatory authority. (Section III below considers this question.)

The corporate tax contains numerous other distinctions. For example, some corporate acquisitions are treated as taxable while others are tax-free.<sup>53</sup> Some distributions to shareholders are taxable while others are tax-free.<sup>54</sup> The distinctions between the taxable forms of these transactions and the tax-free forms is ethereal. A single dollar of cash can, in some circumstances, make an otherwise

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<sup>48</sup> See the description of the so-called “ARCN’s” in Rev. Rul. 83-98, 1983-2 CB 40.

<sup>49</sup> See David Hariton, *Distinguishing Between Debt and Equity in the New Financial Environment*, 49 TAX L. REV. 499 (1993).

<sup>50</sup> MIPS stands for Monthly Income Preferred Stock. Other acronyms for the same security are QUIPS (Quarterly Income Preferred Stock) and TRUPS (Trust Preferred Securities). The differently named instruments differ only in tiny details.

<sup>51</sup> See Hariton, *supra* note 49, for a description of the details of MIPS.

<sup>52</sup> See letter from Robert T. Flaherty (on file with the author).

<sup>53</sup> See Bernard Wolfman, *Whither “C”?*, 38 TAX NOTES 1269 (1988), for a description of some of the disparities.

<sup>54</sup> See George Yin, *A Different Approach to the Taxation of Corporate Distributions: Theory and Implementation of a Uniform Corporate-Level Distributions Tax*, 78 GEO. L. J. 1837 (1990) for a description of these differences.

tax-free acquisition into a taxable purchase.<sup>55</sup> In other circumstances, well more than half the consideration can be cash without disqualifying a transaction as tax-free.<sup>56</sup> Some debt securities may count effectively as stock rather than cash, but some stock and most stock options (sometimes) are treated like debt.<sup>57</sup> The order of interchangeable steps frequently determines the results.<sup>58</sup> It is difficult to detect any discernable patterns in the law.

Corporate tax doctrine makes these distinctions. The function of the rules is to distinguish the various similar forms of transactions from one another. Because of the complexity of the distinctions, the doctrine is complex. The Bittker & Eustice<sup>59</sup> and the Ginsburg & Levin<sup>60</sup> treatises are devoted to explaining the lines drawn within the corporate tax. Each is over two thousand pages long, and neither resolves all issues. Without a reason for having the corporate tax, however, it is not easy to justify the distinctions, and explaining them through doctrine simply becomes a list of arbitrary details.

The realization requirement, the debt/equity distinction, and other distinctions in the corporate tax have the same basic structure. Between relatively fixed points there is a continuous range of transactions, and within the range there is considerable doctrinal uncertainty. This is, I believe, the basic structure of most line drawing problems in the tax law. Assuming the end points are fixed, the difficult question for taxpayers and tax policymakers is how to deal with the transactions in the middle.

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<sup>55</sup> See section 368(a)(1)(B) imposing a “solely” for stock requirement for so-called “B” reorganizations.

<sup>56</sup> See section 368(a)(1)(A) and *John A. Nelson Co. v. Helvering*, 296 U.S. 374 (1935) (allowing a reorganization to be tax free with only 38 percent stock).

<sup>57</sup> Compare section 351(g) (treating preferred stock like debt) with 356(d) (treating some debt like stock). See also *Treas. Reg. § 1.356-6* (treating warrants like stock for some purposes).

<sup>58</sup> See *Commissioner v. Court Holding*, 324 U.S. 331 (1945); *Cumberland Public Service Co. v. United States*, 338 U.S. 451 (1950); and *Esmark Inc. v. Commissioner*, 90 T.C. 171 (1988).

<sup>59</sup> BORIS BITTKER & JAMES EUSTICE, *FEDERAL INCOME TAXATION OF CORPORATIONS AND SHAREHOLDERS*, (6<sup>th</sup> ed. 1994)

<sup>60</sup> MARTIN GINSBURG & JACK LEVIN, *MERGERS, ACQUISITIONS AND BUYOUTS* (July 1997).

An important feature of the realization requirement, the debt/equity distinction, and the corporate tax is that they have little or no underlying normative content. They are, in this sense, meaningless distinctions. Of course, not all distinctions in the tax law have this wonderful feature, and one might argue that the doctrinal uncertainty is a result of this lack of normative content. I believe that many, if not most distinctions in the tax law similarly lack content.<sup>61</sup> The realization requirement and the corporate tax are sufficiently fundamental that vast numbers of tax rules stem from these distinctions alone.<sup>62</sup> And one need only to look at a typical tax

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<sup>61</sup> One might wonder why they arise if they lack normative content. One possibility is that they arise out of historical anomalies that no longer (or never did) have a good normative base. For example, Professor Marjorie Kornhauser has traced the origins of the corporate tax to theories on the nature of the corporation as a person, a theory most would now find wanting. See Marjorie E. Kornhauser, *Corporate Regulation and the Origins of the Corporate Income Tax*, 66 IND. L. J. 53 (1990). Even aside from theories of corporate personality, the corporate tax was enacted prior to the passage of the Sixteenth Amendment to the Constitution. Corporate income taxes were constitutional at that time while individual income taxes were not. See *Flint v. Stone Tracy Co.*, 220 U.S. 107 (1911) (holding that the corporate tax enacted in 1909, four years before the ratification of the Sixteenth Amendment, was constitutional). Given the strong desire to tax income, a corporate tax was the only choice. When the Sixteenth Amendment was ratified and the individual income tax was imposed, the corporate tax could have been eliminated, but was not, creating the two-tier tax system.

The realization requirement appears to be the result of confused thinking by the Supreme Court and an unthinking desire for conformity with the accounting rules (which themselves have historical roots). See Marjorie E. Kornhauser, *The Origins of Capital Gains Taxation: What's Law Got To Do With It?*, 39 SW. L. R. 869 (1985).

<sup>62</sup> Professor Andrews has referred to the realization requirement as the Achilles' Heel of the income tax. William Andrews, *The Achilles Heel of Income Taxation*, in *TAXATION FOR THE 1980'S* (Charles Walker ed., 1983). Once the realization requirement is imposed, a wide variety of other doctrines are needed to implement it. For example, the loss restriction rules (partially contained in I.R.C. §§ 465 (at-risk rules), 469 (passive activity losses), 1091 (wash sales), 1092 (straddles), 1211 (capital losses)), the depreciation rules (in sections 167 and 168), the capital gains rules (partially contained in I.R.C. §§ 1221, 1221, and 1223) and the various timing rules (including I.R.C. §§ 163(d) (interest deduction limitations), 461(h) (economic performance rules), 1272-75 (the original issue discount rules) and 7872 (low-interest loans) all stem from the realization requirement and this list is only a tiny fragment of

reform proposal to get a sense of the number of other distinctions that can be eliminated.<sup>63</sup> Meaningless distinctions are pervasive in the tax system.

Moreover, even distinctions that have normative content have the same basic structure: fixed points, a continuous range of transactions between the fixed points, and uncertainty in the middle.<sup>64</sup> For example, the boundary between personal expenses and business expenses is supported by basic notions of the appropriate tax base and yet has this same structure. We generally tax consumption, so expenses for personal consumption are not deductible. Business expenses, however, are a cost of producing income and, therefore, must be netted against total receipts (either through a deduction or over time through recovery of “basis”) to measure income. There are some things we know are business expenses, like the cost of inventory, and some things we know are personal expenses, such as the cost of a meal with friends. But there is a vast area between these two, and actually drawing the line between the two is not easy. We must decide, for example, whether corner offices, business trips to Aspen, or three martini lunches are business expenses or consumption. We must decide whether commuting expenses, child care, work clothes, and meals eaten in the office should be deductible. Merely knowing that a distinction must be made is not sufficient to determine where the line should be drawn.

The doctrines governing these various activities are byzantine. We must, for example, decide whether meals are for the convenience of the employer, whether sufficient business is conducted at mealtime, whether employee discounts are excessive, whether home offices are exclusively used for business, or whether work clothes can

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the rules that have as their ultimate justification the realization requirement. See Brown, *supra* note 26, for a more complete list of doctrinal distinctions that could be eliminated if the realization requirement were eliminated. The corporate tax is not responsible for as many tax rules (although it is responsible for a reasonable mass of rules – rules that can be explained only by several thousand pages of treatise text), but any policy decision on the taxation of capital income must take into account the effect of the corporate tax.

<sup>63</sup> See *e.g.*, Hall & Rabushka, *supra* note 21.

<sup>64</sup> This structure, in fact, is common to most legal rules. See Schauer, *supra* note 6 and Hart, *supra* note 7 at 126.

be worn outside of the office.<sup>65</sup> This sample is only the tip of the iceberg. Much of the introductory tax class is devoted to exploring the intricate doctrines for making this distinction. Thus, even in cases where the distinction has some normative content, there is a difficult, doctrinally and normatively uncertain area between the fixed points.

The extent to which there are compelling reasons for drawing a line in a given place will vary. In my view, most of the hard distinctions in the tax law lack a sufficient normative foundation for line drawing, either because there is no normative content to the distinction or the existing normative content is indeterminate at the boundaries. In cases, if any, where the underlying reasons are sufficient to determine the boundaries of the distinction, the policymakers have it easy. The focus here is on the more difficult, and far more common cases, the meaningless distinctions.

To the extent one believes that courts and agencies should be bound by the methods of statutory interpretation, there is a method, of sorts, for at least some actors to draw lines. To this extent, the focus of this article is on Congress or a benevolent policymaker making a legislative proposal, where, in either case, the rules of statutory interpretation do not apply. This removes any institutional concerns about the appropriate role of various actors in our government. To the extent one believes that courts and, particularly, agencies, have discretion other than merely to apply the literal words of a statute, implement clear congressional will, or apply some other rule of statutory interpretation, this article addresses these actors. In at least some cases, the Treasury Department has the discretion necessary to address the line drawing problem in a fundamental manner and the discussion applies in at least these cases.<sup>66</sup>

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<sup>65</sup> Generally I.R.C. § 162 governs the treatment of these deductions and allows them only to the extent they are ordinary and necessary business expenses. More specific rules are provided, among other sections, in I.R.C. §§ 119 (meals provided by employers) 132 (fringe benefits generally, including employee discounts); 274 (meals paid for by employers); and 280A (home offices). See also WILLIAM KLEIN & JOSEPH BANKMAN, FEDERAL INCOME TAXATION (11<sup>th</sup> ed.), for numerous other examples and problems.

<sup>66</sup> For example, as noted in text accompanying note 49, section 385 delegates to the Treasury the authority to distinguish between debt and equity.

*B. Traditional Theory Fails*

Traditional methods of evaluating tax policy, most importantly, the Haig-Simons notion of income, horizontal equity, and the notion of ability to pay, fail when applied to the line drawing problem. This section will examine the application of traditional tax policy to line drawing.<sup>67</sup> Before doing so, it is worth examining the most typical method of line drawing, doctrinal reasoning.<sup>68</sup>

The typical approach to line drawing is platonic. It attempts to find the essential meaning of words, such as corporation, partnership, debt, equity, selling, or holding, and draws lines accordingly. For example, the old regulations distinguishing corporations from partnerships looked to the meaning of the words “corporation” and “partnership” to create a list of factors that distinguished the two. Similarly, doctrine distinguishing debt and equity looks to the typical features of “debt” and “equity.”<sup>69</sup>

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The appropriate overlap between direct pursuit of good law with institutional considerations, such as deference to Congress, is well-beyond the scope of this article. There is at least some argument, however, that courts and agencies should directly pursue appropriate legal results in some cases, notwithstanding these institutional concerns.

<sup>67</sup> It has become commonplace to criticize the traditional tax theories. *See supra* note 5. The argument here falls short of these more general criticisms. It focuses only on whether these theories are helpful for line drawing problems. One can believe in the traditional tax theories but agree with the argument made here.

<sup>68</sup> Another important approach to line drawing by courts and agencies is to look to congressional intent. As noted above, congressional intent is indeterminate for many lines in the tax laws, particularly so for hard problems. In addition, line drawing by Congress itself cannot be informed by reference to congressional intent. As noted in text accompanying note 65, to the extent one believes the usual methods of statutory interpretation are binding on courts and agencies, the article may be viewed as addressing Congress or a benevolent policy maker. To the extent courts and the Treasury Department have discretion, the article addresses these actors as well.

<sup>69</sup> *See* Plumb, *supra* note 1, and Hariton, *supra* note 49 for a summary of the doctrine. There are numerous other examples of this approach. For example, one of the major reasons for the most significant change in corporate tax law in decades, the repeal of the so-called *General Utilities* doctrine, was the integrity of the corporate tax. *See* H.R. REP. NO. 99-426, 99<sup>th</sup> Cong., 1<sup>st</sup> Sess. 281 (1985). To believe this, one has to believe that there is some platonic



The platonic approach does not work as a general method of drawing lines. The platonic or essentialist notions contained in doctrinal rules are not tied to values we might want in a tax system.<sup>70</sup> Tax doctrines do not, for example, necessarily make the system more equitable, simpler, or more efficient. Platonic approaches also cannot be defended on pragmatic grounds. In many cases, the words themselves have no readily accessible meaning. The result is that the platonic approach does not make the system more certain.

For example, it is difficult, or impossible, to determine whether a particular event should be a realization event by reference to a definition of the term “realization.” When applied outside of the most direct context of a sale, it lacks meaning. And a determination made this way will not necessarily make the tax system more fair, more equitable, or more administrable. Similarly, the pre-check-the-box regulations distinguishing between partnerships and corporations took the platonic approach. The terms “corporation” and “partnership,” however, do not clearly reference common ideas, particularly in the hard cases where the boundaries of a category are unclear. Platonic reasoning created only complexity and avoidance opportunities. The platonic approach fails on theoretical grounds (because it is not tied to values we care about) and on practical

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notion of the corporate tax whose integrity can be compromised. (To be sure, there are other reasons for the repeal of the *General Utilities* doctrine, but this reason is platonic.) Similarly, the 20 factors that are used to distinguish between independent contractors and employees rely on platonic notions of these categories. See Rev. Rul. 87-41, 1987-1 C.B. 296. The predominant example of platonic thinking in scholarship is the debate over whether particular items are “income.” Much of this debate discusses income as if it were an independent concept whose meaning can be derived through reflection. For a broad approach to tax reform based on a definition of income, see STANLEY SURREY, *PATHWAYS TO TAX REFORM: THE CONCEPT OF TAX EXPENDITURES* (1973), Richard A. Musgrave, *In Defense of a Concept of Income*, 81 HARV. L. REV. 44 (1967). The same approach is used to address more narrow issues, such as whether personal injury damages should be taxable. See, for example, Joseph M. Dodge, *Taxes and Torts*, 77 CORNELL L. REV. 143 (1992).

<sup>70</sup> This observation, as applied more generally to legal issues, goes back at least to Holmes. See, e.g., Oliver Wendell Holmes, *The Path of the Law*, 10 HARV. L. REV. 457 (1897). It has been a recurring theme in the literature since then.

grounds (because the words do not have sufficient clarity to be useful). The platonic approach does not work as a general method.<sup>71</sup>

Policymakers and scholars looking beyond platonic thinking usually look to what I will call traditional tax theory: the Haig-Simons notion of income or its underlying partners in crime, horizontal equity and ability to pay. Consider each theory, in order.

The Haig-Simons definition of income is often cited as the most important income tax principle. Under the Haig-Simons definition, income is the sum of consumption plus the change in wealth during a taxable period. Implementing it would require taxpayers to value their assets at the end of each taxable period and include in income any increase in value and deduct from income any decrease in value. The Haig-Simons definition does not offer guidance for line drawing.

Most lines in the tax law are inconsistent with the Haig-Simons definition. In these cases, the Haig-Simons definition offers no guidance. Consider the taxation of three items that would be taxed the same under the Haig-Simons definition, A, B, and C. Assume that A and C are taxed differently and their taxation cannot be changed. We must decide how to tax B, either like A or like C. Think of this as deciding where to draw the line between things taxed like A and things taxed like C. For example, selling an asset and holding an asset are A and C. Transactions in the middle, such as hedging, are B and must be taxed as a sale or not, like A or like C..

The Haig-Simons definition offers no guidance for this problem. The assumption that A and C are taxed differently means that the Haig-Simons definition is violated. Given that the basic principle is violated, it is not clear whether B then is best treated like A or like C. The Haig-Simons definition offers no help.

Consider the examples given above, the realization requirement and the corporate tax. As discussed above, a number of transactions such as selling and replacing, borrowing against

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<sup>71</sup> To be fair to courts and regulators that adopt the platonic approach, there are arguments based on separation of powers that words should be interpreted according to their plain meaning (whatever that is in this context), which in some sense requires a platonic approach. *See, e.g.*, Livingston, *supra* note 36, for a summary of arguments on statutory interpretation in the field. This paper leaves aside institutional concerns, such as separation of powers and statutory interpretation.

appreciation, and hedging, are difficult to classify under the realization requirement. These transactions fall between selling and holding an asset in a world where selling is treated differently than holding, but taxpayers should, under the assumed Haig-Simons ideal, pay the same tax regardless of whether they sell or hold. In the language used above, selling is A, holding is C, and the issue is the treatment of the intermediate transactions, B.

The Haig-Simons definition cannot help determine whether any of the intermediate events, the B's, should be treated as realization events because it does not admit the possibility of a realization requirement. One might suggest that intermediate cases should be taxed under the Haig-Simons definition,<sup>72</sup> but there is no reason to impose Haig-Simons taxation on the intermediate transactions merely because the treatment of these transactions under the realization requirement is uncertain. A presumption in favor of creating a realization event may not improve things. For example, it may cause taxpayers to change their behavior, increasing distortions caused by the realization requirement (primarily the so-called lock-in effect) and reducing the fairness or efficiency of the tax system.<sup>73</sup> Haig-Simons taxation allows nothing short of perfect taxation (under its terms) and, therefore, does not provide help to decide where to draw lines in the tax law.<sup>74</sup>

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<sup>72</sup> For example, David Shakow, *Wither "C"?*, 45 TAX L REV. 177 (1990) would rewrite substantial portions of the corporate tax law for the sole reason of adhering to this rule of thumb.

<sup>73</sup> The lock-in effect is the incentive for taxpayers to hold assets rather than sell to avoid taxation. Taxpayers are locked in to assets with substantial appreciation even if they would rather sell. See Zodrow, *supra* note 2.

<sup>74</sup> The best argument for using the Haig-Simons approach is that thousands of lines must be drawn in the tax law, and, over time, an optimal solution almost certainly is to move all the lines in the direction of either of the two competing norms, income or consumption. Adherence to the Haig-Simons definition for a given line may then be preferable even if inefficient in the short run. In addition, the Haig-Simons definition may be easier to determine than the efficient line in a given context. Even if this argument is correct, we must be careful taking this argument too far as, in the short run, blind adherence to the Haig-Simons definition can cause significant inefficiencies. See, e.g., Shakow, *supra* note 71 (which proposes significantly changing the corporate tax regime merely to move it closer to the Haig-Simons definition, completely without regard to the effects of the proposal).

The Haig-Simons definition performs even worse with respect to the distinction between debt and equity. Under a pure Haig-Simons tax, there would be no distinction between debt and equity because there would be no two-tier corporate tax. The problems with applying the Haig-Simons definition to the distinction between debt and equity are so severe that I am not aware of a single article that attempts to apply it to help make the distinction.

While the realization requirement and the corporate tax are inconsistent with the Haig-Simons definition of income, some lines are consistent with the Haig-Simons definition. One might hope that the Haig-Simons definition would offer guidance in these cases. The distinction between personal and business expenses is an example of such a line.<sup>75</sup> The problem with applying the Haig-Simons definition to these lines is that it is just a definition. The issue for mixed personal and business expenses, and for other difficult line drawing issues, is where the boundaries of the definition should be. One cannot look to the definition itself for that determination. Thus, the Haig-Simons definition does not help even for lines that are consistent with its strictures.

The other important traditional tax criteria is horizontal equity. Horizontal equity is even weaker for line drawing problems than the Haig-Simons definition.<sup>76</sup> Horizontal equity requires taxing equals equally. What is “equal” is not defined, so in some sense horizontal equity is a tautology.<sup>77</sup> Usually, however, equality is defined by reference to the Haig-Simons definition. If this is the case, the problems with the Haig-Simons definition will infect

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<sup>75</sup> See text accompanying note 63 for a discussion of this distinction.

<sup>76</sup> Horizontal equity has, in particular, been criticized as meaningless. See Louis Kaplow, *Horizontal Equity: Measures in Search of a Principle*, 42 NATIONAL TAX J. 139 (1989) (criticizing horizontal equity as derivative of more fundamental notions of distributive justice); Richard A. Musgrave, *Horizontal Equity, Once More*, 43 NATIONAL TAX J. 113 (1990) (defending horizontal equity as an independent norm). See generally, Peter Westen, *The Empty Idea of Equality*, 95 Harv. L. Rev. 537 (1982). For purposes of this paper, the exchange between Kaplow and Musgrave is secondary because even if horizontal equity has meaning, it would not be helpful for purposes of meaningless distinctions.

<sup>77</sup> See Kaplow, *id.*

horizontal equity as well. If a distinction is consistent with the Haig-Simons definition, horizontal equity offers no additional guidance. If the distinction is inconsistent with the Haig-Simons definition, wherever the line is drawn, horizontal equity will be violated. If A is taxed differently than C is taxed, horizontal equity cannot help determine the taxation of B. If B is taxed like A, horizontal equity is violated because B must also be taxed like C, and if B is taxed like C, horizontal equity is violated because B must also be taxed like A.

The realization example given above is again applicable. Transactions that fall between selling and holding cannot be treated like both. If they are treated as a sale, they are not treated the same as holding, and if they are treated as holding, they are not treated the same as a sale. Horizontal equity will always be violated, and it provides no principle for deciding between lesser and greater degrees of violation. Similarly, horizontal equity cannot help distinguish between debt and equity. By assumption it is violated if there is a distinction between the treatment of similar instruments.

A third traditional tax norm is the principle that each individual should pay taxes in accordance with her ability. The ability to pay principle has long been criticized as too vague to provide meaningful guidance for tax policy, but it continues to be cited as fundamental.<sup>78</sup> Regardless of whether it is generally useful, it does not provide help for most line drawing problems. The reasons are the same as the reasons for the failure of the Haig-Simons definition and horizontal equity. Ability to pay provides no method for balancing considerations where, by assumption, it is violated in some cases. For example, ability to pay principles do not help distinguish between debt and equity.

There are two other slightly less prominent but more promising strands of traditional theory. First, vertical equity is commonly cited as a goal of the tax system. It is unclear exactly what vertical equity means, but it is commonly used to mean taxing differently situated taxpayers differently, with “differently situated”

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<sup>78</sup> See, e.g., STEPHEN G. UTZ, TAX POLICY: AN INTRODUCTION AND SURVEY OF THE PRINCIPAL DEBATE 41 (1993) (“the approach that claims the largest following among prominent tax policy experts is one that . . . requires that taxes be levied in accordance with taxable capacity or ‘ability to pay.’”)

defined by reference to the Haig-Simons notion of income. Because it relies on the Haig-Simons definition, it has the same problems as the Haig-Simons definition. And vertical equity cannot help determine which of *similarly* situated taxpayers should be treated differently if we assume that some must, which is the nature of the line drawing problem. Vertical equity is about *differently* situated taxpayers.

An alternative formulation of vertical equity is simply a concern with the distributional impact of taxes. In this formulation, vertical equity has significant force, but it is not sufficient to answer many questions on its own. For example, if the relevant distinction does not have significant distributional consequences, vertical equity will not matter. And few would argue that all distinctions should be drawn solely by reference to the distributional consequences. Distributional consequences of a decision are relevant but as will be discussed below, I do not believe that for line drawing problems they should be the primary consideration.

Second, traditional theory emphasizes efficiency. Efficiency is usually defined simply as taxing all income as equally as possible. This definition of efficiency does not help for the same reasons horizontal equity does not help. If the assumption is that you are going to tax similar income differently, this concept of efficiency is not sufficiently nuanced to determine how to draw the line. Most of the rest of this paper will be devoted to refining the notion of efficiency to deal with line drawing within the tax law.

Because of the problems with traditional scholarship, scholarly writing on the realization requirement and the distinction between debt and equity is essentially non-existent. There is only a single substantial article on the distinction between debt and equity, a 1971 article by William Plumb.<sup>79</sup> The other major source of learning is a

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<sup>79</sup> Plumb, *supra* note 1. Jeremy I. Bulow, Lawrence H. Summers, & Victoria P. Summers, *Distinguishing Debt from Equity in the Junk Bond Era*, in DEBT, TAXES, AND CORPORATE RESTRUCTURING 135 (John B. Shoven and Joel Waldfoegel, eds. 1990), is a recent, thoughtful article on the subject. They argue in part that the scope of the interest deduction should be based on its effect on corporate behavior. They are particularly concerned about optimizing corporate finance decisions. Their approach is consistent with the approach recommended here. *See also*, Matthew P. Haskins, *Recent Development: Can the IRS Maintain the Debt-Equity Distinction in the Face of Structured Notes?* 32

chapter from the Bittker & Eustice treatise on the corporate tax.<sup>80</sup> My guess is that the reason nobody else has written seriously on the subject is because it is viewed as entirely unprincipled. This alone is amazing given how important the debt/equity distinction is. It is difficult to imagine a similar lack of scholarship between, say, an enforceable contract and an unenforceable contract or between a negligent action and a careful action.<sup>81</sup>

There is no major article analyzing the realization requirement from the traditional perspective.<sup>82</sup> This is so despite a recent Supreme Court opinion that, in the eyes of many, significantly changed the scope of the requirement,<sup>83</sup> a recent statute modifying the scope of the realization requirement (the stock hedging mentioned above),<sup>84</sup> and regulations interpreting the Supreme Court

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HARV. J. ON LEGIS. 525 (1995); Margaret A. Gibson, *The Intractable Debt/Equity Problem: A New Structure for Analyzing Shareholder Advances*, 81 NW. U.L. REV. 452 (1987); Adam O. Emmerich, *Hybrid Instruments and the Debt-Equity Distinction in Corporate Taxation*, 52 U. CHI. L. REV. 118, (1985).

<sup>80</sup> BORIS I . BITTKER & JAMES S. EUSTICE, FEDERAL INCOME TAXATION OF CORPORATIONS AND SHAREHOLDERS ¶ 4.02 (6<sup>th</sup> ed. 1994).

<sup>81</sup> The reason for the lack of scholarship is not because the Plumb and Bittker & Eustice articles are so good that nothing is left to say. Their approach sheds little light on the appropriate distinction between debt and equity. Both simply survey the case law and attempt to find patterns on the cases, much along the lines of Langdellian scholars from ages past. The underlying principles they develop from the case law look to see whether the features of traditional debt and traditional equity are present in the financial instrument in question. While this may be appropriate for a practitioner trying to determine the likely treatment by the courts of a particular instrument, it does not suffice for scholarship or for policymaking. Other scholarship in the field, although less case-law oriented, takes the same approach. For example, a recent article by David Hariton proposes that the only relevant question is to what extent the instrument insulates the investor from the risks and rewards of the issuer's business. See Hariton, *supra* note 49. Hariton offers no support for this test other than because participation in the business is a traditional feature of equity, which is platonic reasoning.

<sup>82</sup> Two recent article attempt to analyze the realization requirement from an efficient perspective, which is the approach recommended here. See Shaviro, *supra* note 5; Weisbach *supra* note 41.

<sup>83</sup> Cottage Savings Ass'n, v. Commissioner, 111 S. Ct. 1503 (1991).

<sup>84</sup> I.R.C. § 1259.

decision in one of its more important applications.<sup>85</sup> The realization requirement is simply not susceptible to traditional analysis.<sup>86</sup>

In sum, traditional scholarship has failed with respect to the line drawing problem (except to argue that most distinctions should be eliminated). Two bedrock elements of our tax system, the realization requirement and the corporate tax (particularly the debt/equity distinction), have not been and cannot be adequately addressed through appeals to ability to pay, the Haig-Simons criteria, horizontal equity, platonic notions or other similar arguments. Scholarship addressing these areas is almost nonexistent, which is stunning given their importance to our tax system. Moreover, line drawing problems are pervasive and enduring. Virtually all tax policymaking involves line drawing at some level. A method of thinking about line drawing is vital.

## II. An Efficiency Analysis of Line Drawing

If traditional analysis of line drawing cannot guide us, what can? I will argue that lines in the tax law should be drawn solely by reference to the consequences of where the line is drawn. In particular, where a line is drawn affects behavior and, therefore, has efficiency consequences. Drawing a line in a given place can be more or less efficient than drawing it in a different place. Efficiency should be the primary concern for line drawing in the tax law.

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<sup>85</sup> Treas. Reg. §1.1001-3.

<sup>86</sup> There is more writing on the distinction between personal and business expenses, some of it focusing on efficiency issues. *See, e.g.*, Thomas D. Griffith, *Efficient Taxation of Mixed Personal and Business Expenses*, 41 UCLA L. REV. 1769 (1994); Avery Katz & Gregory Mankiw, *How Should Fringe Benefits Be Taxed?*, 38 NAT'L TAX J. 37 (1985). *See also* Daniel I. Halperin, *Business Deduction for Personal Living Expenses: A Uniform Approach to an Unsolved Problem*, 122 U. PA L. REV. 859 (1974); William A. Klein, *The Deductibility of Transportation Expenses of a Combination Business and Pleasure Trip - A Conceptual Analysis*, 18 STAN. L. REV. 1099 (1966). This writing often refers directly to the underlying goals of distributive justice such as efficiency and distributional concerns. I suspect the reason why the writing on the personal, business boundary takes this approach but the writing on other distinctions, such as the debt, equity distinction, does not, is that it is easier to locate the personal, business decision in these underlying goals.



A change in where a line is drawn can also affect the distribution of the tax burden, and if one cares about consequences, distributional concerns are important. Nevertheless, I will argue that it is usually the case for line drawing problems that we are best off drawing lines to be efficient and adjusting the tax rates to achieve an appropriate distribution of the tax burden.

This section begins by defining efficiency, as used here, and then develops some intuitions for applying it to line drawing, using the running examples, the realization requirement and the debt/equity boundary as illustrations. At a minimum, this first step shows that the line drawing problem can be analyzed in a principled fashion, which is a step well beyond current thinking. This section will then argue that efficiency is the appropriate concern, briefly discussing the reasons for drawing lines by reference to the consequences of the decision and then considering distributional concerns.

#### *A. Applying Efficiency to Line Drawing Problems*

This section begins with a definition of an efficient tax and an example of how the definition can be used to determine a tax structure. The discussion is essentially a brief summary of concepts found in standard texts in public finance.<sup>87</sup> With that background, this section extends the usual concepts of efficient taxes to line drawing.

##### *1. Definition of an Efficient Tax*

The efficiency of a tax is measured by the so-called “dead weight loss,” or “excess burden” of the tax. Dead weight loss results from the lost consumer (and producer) surplus when the after-tax world is compared to the before-tax world.

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<sup>87</sup> See HARVEY S. ROSEN, PUBLIC FINANCE, (4<sup>th</sup> ed. 1995) OR JOSEPH E. STIGLITZ, ECONOMICS OF THE PUBLIC SECTOR, (2d ed. 1988) for a good undergraduate text, and RICHARD W. TRESCH, PUBLIC FINANCE: A NORMATIVE THEORY (1981) or ANTHONY B. ATKINSON & JOSEPH E. STIGLITZ, LECTURES IN PUBLIC ECONOMICS (1980) for more advanced work. See also HANDBOOK OF PUBLIC ECONOMICS, (Alan Auerbach & Martin Feldstein eds. 1985) for a good but technical survey of the public finance literature. Survey articles on optimal tax theory also provide a good introduction to the subject. See, e.g., Nicholas Stern, *The Theory of Optimal Commodity and Income Taxation: An Introduction*, in TAXATION FOR DEVELOPING COUNTRIES (Nicholas Stern & David Newberry eds. 1987).

Dead weight loss is easiest to understand in terms of an example. Assume that there are only two commodities in the world, wheat and barley, that each sells for \$1 per bushel, and that at that price, consumers purchase 100 bushels of each during the year. Suppose that the government imposes a 30 percent per bushel tax on wheat and no tax on barley. If there were no change in behavior, the government would raise \$30 per year. But the price of wheat will go up relative to the price of barley because of the tax, so consumers will change their purchases. In the extreme, consumers will switch entirely to barley. The government would raise no tax revenue, but the loss to consumers might be large.<sup>88</sup> If consumers purchased only 50 bushel of wheat (and spent their remaining money on barley), the tax collected would be only \$15, but the loss to consumers would be more than \$15. They would pay the \$15 in tax and also switch some of their consumption from wheat to barley, contrary to their preferences. Of course, the tax revenue raised does not count as dead weight loss because that revenue is simply transferred to the government. The difference between the tax revenue raised and the loss in value to the consumers is the “dead weight loss” of the tax. An efficient tax is simply a tax with low dead weight loss.

The notion of dead weight loss is often demonstrated graphically. Suppose wheat, the taxed commodity in the above example, has the supply and demand curves depicted in Figure 1. The price and quantity of wheat are, without tax,  $P_1$  and  $Q_1$ . The consumer surplus is the triangle ACE. Suppose a tax of  $t$  is imposed on each unit. The price then goes up to  $P_2 (= P_1 + t)$  and the quantity goes down to  $Q_2$ . The loss to the consumer is the trapezoid BCEF. The tax raised is the shaded rectangle BDEF. The difference between the tax raised and the loss to the consumer, the shaded triangle BCD, is the dead weight loss from the tax. Dead weight loss is related to the change in the demand for the commodity in response to the change in the price caused by the tax. The size of the triangle is  $1/2t(Q_1 - Q_2)$  (with  $t$  stated as an absolute, per item tax),

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<sup>88</sup> If wheat and barley were perfect substitutes, so that even penney tax on wheat would cause consumers to switch to barley, then, arguably, there would be no loss to consumers and no revenue raised. A tax that raises revenue will always create dead weight loss, however (other than a tax that is unavoidable such as a poll tax).

which can easily be shown to be equal to  $1/2\varepsilon P_1 Q_1 t^2$ , where  $\varepsilon$  is the price elasticity of demand (and with  $t$  stated as a percentage tax).<sup>89</sup>

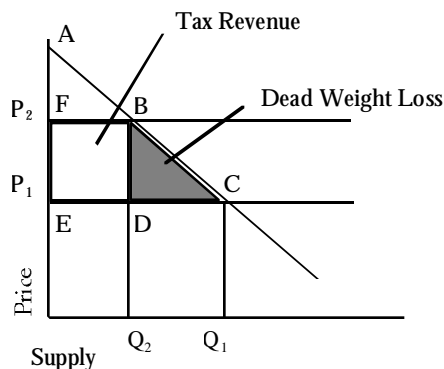


Figure 1

The example above is too simple because the government could just tax all commodities, barley and wheat, without changing relative prices. Taxes in the real world change relative prices because at least one commodity, leisure, cannot be taxed. If everything but leisure were taxed at a uniform rate, the relative price of leisure would become cheaper, creating dead weight loss. Individuals might prefer to work more (or less) or consume more (or less), but they do not because of the tax. Thus, dead weight loss from taxation is unavoidable.

One might think from this discussion that an efficient tax would leave pre-tax behavior entirely undisturbed. This intuition is close but not exactly right. Individuals will have less revenue after paying taxes. If they have less revenue, they *should* change their behavior. For example, if a person would eat caviar every night absent taxes and the government takes half of his money through taxes, he should not continue eating caviar every night. Instead, he should behave like someone with half the money he originally had. Rice and beans

<sup>89</sup>  $1/2\varepsilon P Q t^2 = 1/2 (\Delta Q/\Delta P) (P/Q) P Q t^2 = 1/2 (\Delta Q/tP) (P/Q) P Q t^2 = 1/2 \Delta Q P t = 1/2(Q_1 - Q_2)t^*$  (with  $t$  stated as a percentage tax and  $t^*$  the equivalent per item tax).

every few nights would be the appropriate behavior. What we do not want to do is to allow the tax to distort the choice between rice, beans, and caviar for that person given his after-tax income.

Thus, tax efficiency is concerned with the difference between consumers' actual behavior, after taxes, and the behavior they would engage in merely because they have less revenue. If the tax changes the relative prices between rice, beans, and caviar, then our sample consumer's behavior will be different from the behavior that results merely because of the loss of income.<sup>90</sup> It is this difference that creates the inefficiency.

The concept of efficiency can be defined more rigorously. Consider a thought experiment in which the government takes money from a consumer through taxes (and therefore changes relative prices) and then gives back to the consumer the money raised through a lump sum distribution (which does not change relative prices).<sup>91</sup> The consumer has no net change in revenue. (Assume for the moment that the government's administrative costs are zero. Any administrative costs will just add to the inefficiency.) The tax, however, will change the relative prices of goods, which will change behavior and reduce utility relative to the untaxed world, even if all the tax revenue is returned to the consumer. To keep utility constant, the government would have to give the consumer more money than it raised with the tax. The dead weight loss from a tax is the difference between the amount raised by the tax and the amount that would be needed to give back to the consumer to make the consumer indifferent to the tax. Note that because the tax revenue is returned to the consumer, the changes in behavior because of the reduction in income from the tax are eliminated, leaving just the changes in behavior induced by price changes. An efficient tax is a tax with low dead weight loss.<sup>92</sup>

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<sup>90</sup> The loss in income will often cause a change in relative prices because, as noted above, people with less income may change their consumption patterns, which will change the demand for various goods. Taxation will change relative prices from *this* set of prices, causing inefficiency.

<sup>91</sup> Other than by increasing income, which will cause a shift in the supply and demand for various commodities.

<sup>92</sup> Note that this definition of dead weight loss uses the so-called "Hicks compensating variation" measure in which the consumer's utility is held constant through compensating payments. An alternative formulation known

Four comments should be made. First, there are some terms of art from the economics literature that will be useful in discussing the application of efficiency to line drawing. Economists break down the response to a change in prices into the income effect and the substitution effect. The income effect is the effect on behavior caused by the change in net income to the consumer from the tax, leaving relative prices the same. The substitution effect is the change in behavior from the change in relative prices, leaving income the same. As noted above in the discussion of the caviar lover, efficiency is not concerned with income effects. Efficiency depends solely on so-called “substitution effects.” Reviewing the definition of efficiency given above will make it apparent that it isolates the substitution effect. Because it focuses only on substitution effects, efficiency relies on the so-called “Hicksian” or “compensated demand curve.” The compensated demand curve is the schedule of quantities demanded by the consumer as prices change, assuming additional income is given to (or taken from) the consumer to keep him indifferent to the change in prices (i.e., hold utility constant). The “price elasticity of demand” is the percentage change in quantity demanded for a percentage change in price. A commodity’s “own elasticity of demand” refers to a percentage change in its own price. A “cross-elasticity of demand” refers to a percentage change in quantity of one commodity with respect to a percentage change in the price of another commodity. A “compensated elasticity” is an elasticity computed by reference to the compensated demand curve. Because compensated demand curves are the relevant functions, compensated elasticity is the relevant elasticity, throughout the remaining text, I will use demand curve and elasticity to mean compensated demand and compensated elasticity.

Second, the definition of an efficient tax assumes perfect markets. Changes in relative prices of goods are assumed to reduce welfare. This, of course, is a strong assumption. To the extent there is market failure, the definition of an efficient tax changes. In

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as the “Hicks equivalent variation” measures the difference between taxes raised and the amount the consumer would pay to maintain the pre-tax prices. For purposes of this discussion, the two measures are effectively equivalent. The example in the text of wheat and barley relied on the Hicks equivalent variation rather than the Hicks compensating variation.

particular, so-called Pigouvian taxes are taxes (or subsidies) that attempt to cure market failures. For example, a tax on polluters might help them internalize the cost of the pollution that they impose on society. Similarly, if the structure of an industry allows economic profits, the profits can be taxed. The notion of efficiency assumes that where Pigouvian taxes are appropriate they should be used.<sup>93</sup>

Third, the model eliminates the distributional effects of taxes. The loss experiment relies on the assumption that there is only a single representative consumer, which means distributional concerns are ignored. Not all consumers are alike, and the loss experiment, which requires returning the tax revenue to consumers, is indeterminate once we allow for differences among consumers. Moreover, the redistributive effects of a tax will determine, in part, its welfare effects and must generally be considered. Section \_ below contains a discussion of distributional issues and argues that the single consumer model is usually the appropriate model for decisions regarding line drawing problems.

Fourth, the notion of efficiency used here is somewhat different from notions of efficiency commonly used in the law and economics literature. The two common notions used in this literature are Pareto efficiency and Kaldor-Hicks efficiency.<sup>94</sup> A state of affairs is Pareto efficient if nobody can be made better off without making someone else worse off. Kaldor-Hicks efficiency requires that those who benefit from a change could make transfer payments to those who are hurt by a change such that the change would then be Pareto efficient.

The definition of efficiency given above relied on a single representative consumer, so notions of transfer payments or

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<sup>93</sup> Some market imperfections cannot readily be eliminated with a Pigouvian tax. Of particular relevance, information may be costly and offsetting this problem with a Pigouvian tax is not possible. Except where specifically noted, I will generally assume that information is costless because the case of a perfect market is sufficiently informative. See Louis Kaplow, *Accuracy, Complexity, and the Income Tax*, 14 J. L. ECON. & ORG'N 61 (1998) for a discussion of information costs and taxation.

<sup>94</sup> See JEFFRIE G. MURPHY & JULES L. COLEMAN, *THE PHILOSOPHY OF LAW, AN INTRODUCTION TO JURISPRUDENCE* 182-187 (1990) for a basic discussion of these notions of efficiency.

distributional effects are absent. The Kaldor-Hicks definition is sometimes used as if it separated efficiency from distributional concerns, while the definition of efficiency used here does not; it explicitly applies only to the single consumer case.<sup>95</sup> With this limitation, the notion of efficiency given above is related to Kaldor-Hicks efficiency, in that a more efficient tax creates additional utility in society that can be potentially be redistributed through cash payments.

### *2. Using the Measure of Efficiency to Determine Taxes*

The efficiency goal for tax policy is to find the tax that causes the lowest dead weight loss. A seminal application of this concept was by the economist Frank Ramsey, whose results (and others' extensions) usually are called "optimal commodity taxation." This section describes the Ramsey result which is used in the next section to examine line drawing.

The most efficient tax system is the tax that raises the necessary revenue with the lowest dead weight loss. A tax system will have the lowest dead weight loss if and only if the change in dead weight loss from a change in the tax on a commodity (the marginal dead weight loss) is equal for all commodities. Suppose this were not true. Then the tax system with the lowest total dead weight loss creates different marginal dead weight loss for different commodities, say the marginal dead weight loss due to the tax on A is higher than on B. Suppose we increase the tax on B and reduce the tax on A, keeping revenue constant. The increase in tax on B will not increase dead weight loss as much as the decrease in tax on A will reduce dead weight loss because the marginal dead weight loss on B is lower than

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<sup>95</sup> That is, there is no claim that one can separate equity and efficiency. Instead, the single consumer case is used only to develop intuitions about the more general, multi-consumer case and one must be careful to ensure that the intuitions carry over. In the multi-consumer case, discussed in section \_ below, distributional concerns cannot, except under special conditions, be separated cleanly from efficiency concerns. The only valid mode of analysis in this case is often a direct reference to the social welfare function without regard to Pareto or Kaldor-Hicks efficiency or the measure of dead weight loss used here.

The Kaldor-Hicks criteria is often used by those use claim wealth maximization is the appropriate notion of distributive justice. *See* RICHARD A. POSNER, *THE ECONOMICS OF JUSTICE* 48-115 (1983). Wealth maximization is not a notion of distributive justice that is relied upon in this paper.

on A. This means the change reduces dead weight loss while keeping revenue constant, contrary to the initial assumption. Therefore, the most efficient tax will set the marginal dead weight loss equal for all commodities.

In addition, the size of the dead weight loss from a tax on an item is related to the elasticity of demand of the item. The greater the elasticity, the more the demand changes for a change in price induced by a given tax, and the greater the economic distortion. For example, if in the wheat/barley example given above, wheat has a high elasticity, consumers will substitute away from wheat toward barley and the dead weight loss will be high. Therefore, taxing commodities with a low elasticity will generally be more efficient than taxing commodities with high elasticity.

Nevertheless, the ability to raise taxes on high elasticity items is limited because as the tax on a commodity increases, the marginal dead weight loss increases. In particular, it can be shown that dead weight loss increases with the square of the tax rate and, therefore, marginal dead weight loss increases with the tax rate. Thus, the elasticity conclusion is tempered. We cannot raise the rate on a high-taxed, low-elasticity item indefinitely. Eventually, the marginal dead weight loss will be the same for a low-taxed, high-elasticity item. Taxing any one commodity at too high a rate, even one with a low elasticity, will create undue excess loss.

The intuition can be developed using the same diagram used above to illustrate dead weight loss. Figure 2 shows a commodity with a low elasticity (the percentage quantity change is relatively little for a percentage price change). We want to measure marginal dead weight loss, which is the loss from a change in the tax from  $P_2$  to  $P_2$  plus a small increase in the tax,  $t$ . The increase in dead weight loss from the increase in tax is the shaded trapezoid ABCD. The size of the marginal dead weight loss depends not only on the elasticity of the demand for the commodity but on the existing level of tax. The higher the existing tax, the larger the marginal dead weight loss from an increase in the tax.



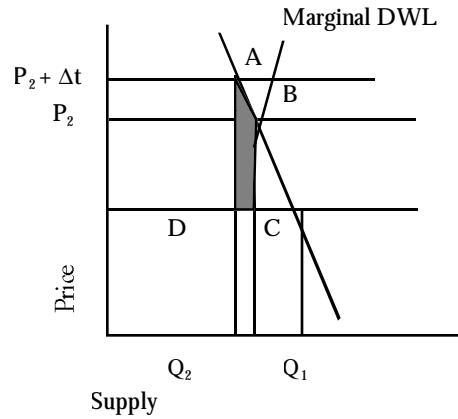


Figure 2

If the elasticity were low, then the marginal dead weight loss would be represented by the shaded trapezoid in Figure 3. To set marginal dead weight loss equal in each case, we need to know the existing level of taxes and the elasticities. The trapezoid in Figure 2 is skinnier but taller and to set the areas of the trapezoids equal one needs to know both the width and the height.

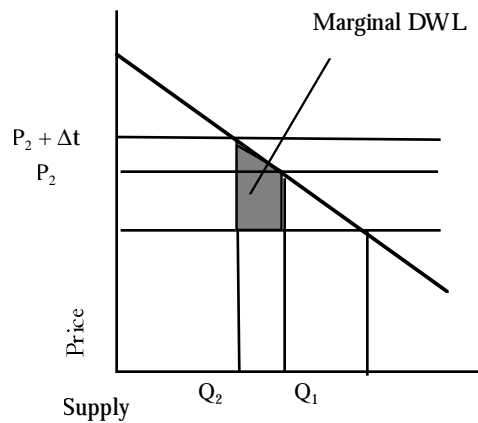


Figure 3

The Ramsey result is that taxes should vary inversely with the elasticity of demand for a commodity. That is, mathematically, the combination of factors, the width and height of the marginal dead weight loss trapezoids, work out so that the tax rate should be exactly inverse to the commodities' elasticities. If the elasticity is high, the tax should be low and if the elasticity is low the tax should be high. The rate on a low elasticity commodity, however, should not be so high that the marginal dead weight loss exceeds the marginal dead weight loss on other commodities.

The restrictions to produce the inverse elasticity rule are quite strict (most importantly that the price of one commodity does not depend on the price of other commodities). In the more general case, the Ramsey result is that taxes should be set so that the percentage change in demand for all commodities caused by the taxes is equal (the equal percentage change rule). The intuition is similar to the inverse elasticity rule, with the only major difference being that we must pay attention to the effect of the tax on one commodity on the demand for another. Like the inverse elasticity rule, to set the tax this way will generally require different rates on different commodities, and high elasticity commodities will attract low tax rates.<sup>96</sup> (Appendix B includes, as part of a model of the line drawing problem, a derivation of both results.<sup>97</sup>)

### *3. Applying Optimal Tax Results to Line Drawing*

The question is how we can apply these insights to the line drawing problem. The Ramsey model does not directly apply as it allows the policymaker to set individualized rates on each commodity, and there are no costs of classifying the commodities. Line drawing is not a relevant issue in the Ramsey model. This section considers three interpretations or extensions of the Ramsey model that can be used to develop intuitions about the line drawing problem.

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<sup>96</sup> Economists have specified the conditions under which this logic yields a uniform rate on commodities. The general condition is that all goods must be equal complements of leisure. See Atkinson & Stiglitz, *supra* note 25 at 379 (1980).

<sup>97</sup> The derivation can also be found in standard public finance texts. See *supra* note 86 for a list.

Corlett and Hague, in a well-known interpretation of the Ramsey model, assumed that there are three goods in the economy, two of the goods are taxed at the same rate and the third good, leisure, is (and must remain) untaxed.<sup>98</sup> They asked whether we can make a welfare improving tax change. That is, they studied an hypothesized tax system and asked where there are any welfare enhancing tax reforms. They found that a decrease the tax on the good that is the better substitute for leisure and a corresponding revenue neutral increase in the tax on the other good improves welfare.<sup>99</sup> The intuition behind the result is that by reducing the tax on the substitute for leisure, the distortions caused by failure to tax leisure are reduced. That is, because leisure is untaxed, individuals will shift from substitutes for leisure (which are taxed) to leisure. Reducing the tax on substitutes reduces the shifting. Similarly, increasing the tax on complements to leisure makes engaging in leisure more expensive, reducing the distortions caused by failure to tax leisure.

A similar result was developed by Auerbach.<sup>100</sup> He considered the case where certain taxes cannot be changed (for whatever reason, political or otherwise), and determined the optimal choice for the remaining taxes. Consider the simple case where only two commodities are taxed, and the tax on the first commodity is fixed at a given amount and we are allowed to set the tax on the other.<sup>101</sup>

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<sup>98</sup> W. J. Corlett, & D.C. Hague, *Complimentarity and the Excess Burden of Taxation*, 39 REV. OF ECON. STUDIES 87 (1953).

<sup>99</sup> One good is a substitute for another if individuals will increase their consumption of the substitute when the price of the other good increases. A good is a complement for another if individuals will decrease their consumption of the complement when the price of the other increases. A.K. Dixit, *Welfare Effects of Tax and Price Changes*, 4 J. PUBLIC ECON. 103 (1975) generalized the model to n goods.

<sup>100</sup> See Alan J. Auerbach, *Excess Burden and Optimal Taxation*, HANDBOOK OF PUBLIC ECONOMICS, *supra* note 86 at 113. Auerbach followed a model first proposed by Green. See H.A.J. Green, *The Social Optimum in the Presence of Monopoly and Taxation*, 29 REV. OF ECON. STUDIES 66 (1961).

<sup>101</sup> The model does not require the tax on the second commodity to raise any particular amount of revenue. Revenue neutrality is maintained in the model by adjusting a "lump sum" tax, which is a tax that cannot be altered through behavior, such as a poll tax. The goal is to show that even in the

Auerbach shows that in this case, the tax on the second commodity should be set based on the ratio of (i) its cross-elasticity with the first commodity to (ii) its own elasticity.<sup>102</sup> Consider each element.

Recall that the cross-elasticity measures the percentage change in the demand of a commodity for a percentage price change in another. If the cross-elasticity is high (in absolute value), then the commodity is either a good substitute to or a good complement for the second commodity. The two commodities are closely related. If the cross-elasticity is near zero, then the two commodities are largely unrelated.

The cross-elasticity in the numerator of the ratio means the higher (in absolute value) the cross-elasticity, the higher the tax (or subsidy). This makes intuitive sense. If the second commodity is a good substitute for the first (so that the cross-elasticity is high), a tax on the second will reduce the distortions caused by the tax on the first commodity. For example, if butter is taxed, a tax on margarine (a substitute for butter) would reduce shifting from butter to margarine. If the second commodity is a complement to the first, the tax should be negative (a subsidy). Again this makes sense as the subsidy will reduce distortions caused by the first tax. If right shoes are taxed, a subsidy for left shoes will reduce the distortion caused by the tax. And if the cross-elasticity is near zero, a tax or subsidy on the second commodity will have little effect on the distortions caused by the tax on the first.

A commodity's own elasticity measures the sensitivity of its demand to a change in its own price. Because the own-elasticity factor is in the denominator, the size of the tax or subsidy suggested by the cross-elasticity, is tempered: the higher the own-elasticity, the lower the tax. This is consistent with the Ramsey intuition. From the definition of dead weight loss we know that taxing a high elasticity commodity will cause a large dead weight loss, which means we should not tax it at too high a rate. If its own elasticity is

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presence of lump sum taxation, a 'distorting' tax on the second commodity may improve welfare. This is directly within the tradition of "second best" results, in which a change when considered in isolation may not seem appropriate, can actually be welfare improving.

<sup>102</sup> The formula is given by:  $\theta_2 = -\theta_1(\varepsilon_{12}/\varepsilon_{22})$ , where  $\theta_1$  is the tax on commodity 1, and  $\varepsilon_{12}$  is the cross-elasticity of commodity 1 for commodity 2 and  $\varepsilon_{22}$  is commodity 2's own elasticity.

low, then we can impose a tax or a subsidy on the commodity with low cost, so the size of the tax or subsidy will be greater than if its own elasticity were high.<sup>103</sup>

The Corlett and Hague and the Auerbach models give intuitions about line drawing. The models involve setting tax rates. We can view line drawing as simply setting the rates on various transactions. Treating a security as equity rather than debt changes the effective tax rate on the security. Treating a transaction as a realization event changes the tax rate on the transaction. Line drawing is a subset of setting rates.

To apply the models, suppose we have three items, A, B, and C. Assume A and C are taxed differently and are fixed, and we must decide how to tax B. The models point to two factors. First, if B is a close substitute for one but not the other, say it is a substitute for A but not for C, then it makes sense to tax B like its substitute, A. That is, in the Auerbach model, the higher the cross-elasticity, the higher the tax. (I will call this the substitution factor and the associated costs the substitution costs.) Second, we should not tax B too much higher (or lower) than it would be absent the line drawing limitation. That is, we do not want to tax B too “wrong” merely because it should be taxed like close substitutes. (I will call this the direct factor and the associated costs the direct costs.)

For example, consider an activity that falls between traditional notions of realization and of holding (non-realization), say

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<sup>103</sup> In the more general case, where there are several pre-existing fixed taxes and a single tax that we can change, the tax should be set equal to the [fixed]-tax weighted average of the ratios.

A model by John Wilson provides a similar insight. See John D. Wilson, *On the Optimal Tax Base for Commodity Taxation*, 79 AM. ECON. REV. 1196 (1989). Wilson considers the optimal number of commodities that should be taxed under the assumption that adding additional commodities to the base increases administrative costs. As commodities are added to the base, the marginal distortion from taxation decreases (i.e., as the tax base gets closer to ideal) but the marginal administrative cost increases. He finds that a rise in the substitution elasticities between taxed and untaxed commodities increases the optimal number of taxed commodities. This is consistent with the conclusion of the Auerbach and Corlett and Hague models, that we should be concerned about the substitutability of commodities that are taxed differently. For a prior paper along similar lines, see Shlomo Yitzhaki, *A Note on Optimal Taxation and Administrative Costs*, 69 AM. ECON. REV. 475 (1979)

borrowing against appreciation or hedging the risk of gain and loss. If an activity is a close substitute for selling, then, all other things being equal, it should be taxed as a sale. That is, activities that are just “like” selling should be taxed like a sale because they are likely to be close substitutes for selling. But if the activity has a high own-elasticity, taxing it as a sale would produce a large dead weight loss, which acts as a countervailing factor. That is, if taxpayers can just avoid the new rule by shifting to yet another transaction, taxing the activity like a sale may not be efficient. If we can find a dividing line so that substitutes are kept together and the activities treated like a sale collectively have a low own-elasticity, then it both factors point in the same direction and the rule will be efficient.

Similarly, consider a security that falls somewhere between equity and debt. If the security is a closer substitute for equity than for debt, it should be taxed as equity. The benefit of taxing it like its close substitute, however, is limited because taxing the security as equity will make the distortions caused by the corporate tax worse.<sup>104</sup> If it is a close substitute for debt, then we should tax it like debt. Both factors point in the same direction in this case assuming debt taxation produces fewer distortions than equity taxation. That is, we should tax a security like its closest substitute but we should be more expansive in applying this rule for debt than for equity because the debt rules are generally better (cause fewer distortions) than the equity rules.

A third model, which is given formally in Appendix B, is to consider the case where there are three commodities (and leisure) but only two tax rates are allowed. Thus, one of the commodities must be taxed like one of the others, effectively drawing a line. For example, commodity B must be taxed either like A or like C. Effectively, we must draw a line to one side of B or the other. Thus, B might be a transaction that either will or will not be treated as a realization event. Modeling this case allows us to determine whether dead weight loss is lower if B is taxed like A or like C. The goal is to

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<sup>104</sup> Note that the interpretation of the model here is somewhat loose. Rather than focusing on own-elasticity as a measure of distortion caused by the tax, I am using the more general distortions from the two-level corporate tax. That is, I am using the denominator in the ratio as a proxy for the distortions caused by taxing the item.

simulate the line drawing problem more directly than either the Corlett and Hague or the Auerbach models by including in the model the discontinuity created by lines. B must be taxed either like A or like C, which is the type of decision in line drawing.

The solutions for the optimal rate structure are similar to the familiar Ramsey rule except that the optimal rates are based on the weighted average of the commodities that are taxed similarly. Thus, in the simple case (i.e., with the restrictions in the Ramsey model that produce the inverse elasticity rule), if commodities A and B are taxed at the same rate, the optimal rate is inverse to the weighted average (by size of the market) of the elasticities of A and B. In the more general case, the optimal rates create the same weighted-average percentage reduction in the demand for the commodities. If A and B are taxed at the same rate, the combined percentage reduction in demand for A and B must be the same as the percentage reduction in demand for C.

To determine whether it is best to tax B like A or like C we must calculate dead weight loss for each situation given the optimal rates and then choose the tax rule with the lower dead weight loss. Intuition might be that dead weight loss is minimized if commodities with the most similar elasticities are taxed the same. This is not, in general, correct. The cost of deviating from the optimal tax will be different for different commodities which means we should be less willing to get it wrong for some items than for others. In particular, the cost of being "wrong" by a given amount for a high elasticity commodity will be higher than the cost of being wrong for a low elasticity commodity. Thus, it is more important that we not be wrong for high elasticity commodities than for low elasticity commodities because the costs of doing so are higher. We should be less willing to group commodity B with the high elasticity commodity because the cost will often be higher than grouping B with the low elasticity commodity. (The rates are set optimally subject to a revenue constraint, so grouping B with a commodity causes its rate to vary from the optimal rate.) That is, we should only group commodity B with the high elasticity commodity if its elasticity is somewhat closer than halfway between the two.<sup>105</sup>

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<sup>105</sup> In the general equilibrium case, optimal rates are set so that they cause the same percentage reduction in the weighted average of the two commodities

The conclusions from the three commodity, two tax model echo the conclusions of the Auerbach model. Once again, if we consider a transaction that falls between selling and holding, the transaction should be taxed like its closest substitute (to take into account the substitution costs), tempered by the need not to tax the transaction too much if its elasticity is high (to take into account the direct costs). A similar conclusion for the distinction between debt and equity also follows—we should tax a security like its closest substitute but be a little more generous for debt than equity.

To summarize the discussion, the three models examined, the Corlett and Hague model, the Auerbach model, and the three commodity, two tax model, all introduce some imperfection in the system and examine how to make the tax structure most efficient given the imperfection. In this sense, the models are similar to the line drawing problem, in which we assume that a line must be drawn between essentially similar items. The models all point to the same basic factors: substitution costs and direct costs. We should tax similar things similarly to minimize substitution costs, but not too much at the expense of direct costs.

#### *4. Further Comments on Applying Optimal Tax Insights to Line Drawing*

The intuitions developed from the models are useful, but the models are highly stylized and there are several potential problems with applying the above models directly to the line drawing problem. This section discusses these problems and gives some (more informal) thoughts on applying efficiency to line drawing problems in more realistic settings. To develop the intuitions, this section turns back to the check-the-box regulations and considers them in more detail.

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taxed at the same rate and the commodity taxed alone. To determine where the line should be drawn, calculate the optimal rates and the corresponding dead weight loss in each possible situation and then select the rule with the lowest dead weight loss. To actually solve the model requires particular demand functions, which goes beyond the formal model in the appendix. We can, however, draw conclusions from inspection of the optimal rate structure. Dead weight loss is likely to be minimized based on the factors indicated above: the commodity's own elasticity and whether it is a substitute for something else (the cross-elasticities). Thus, high elasticity items should not be taxed at a high rate and similar items should be taxed similarly.



Recall that the old four factor test treated a business as a corporation if (i) it was incorporated under state law; (ii) the equity of the entity was publicly traded; or (iii) the entity had the requisite number (three) of the four corporate factors. The third element, the four factors themselves, were easily avoidable and the check-the-box regulations repealed this element of the test while leaving the public trading and actual incorporation lines. (I will ignore the actual incorporation test here and assume that going forward, the effective line is public trading because of the advent of limited liability companies which effectively make actual incorporation elective.)

The basic reasoning behind the regulations is consistent with the models. Assume that publicly traded entities will be treated as corporations (e.g., General Motors) and entities that are not publicly traded and that fail all four factors in the four factor test will be treated as partnerships (e.g., a two person, general partnership). These are the “fixed” points, the A and the C. The question is how we treat entities in the middle and we consider as a possible line the four factor test of old law.

The four factors, it turns out, had close substitutes that did not result in the corporate tax. It took the market some time to develop these substitutes, but by the time the check-the-box regulations were issued, substitutes to the four factors were consistently used because of their lower tax cost.<sup>106</sup> For the same reasons, the four factors were themselves highly elastic. Both elements from the models point in the same direction: the four factors should not be taxed differently than their substitutes, so they should not create corporate status as their substitutes do not, and they should not be taxed at a high rate, so again, they should not create corporate status. Using the four factors to define corporate tax is, under this logic, inefficient. Thus, the basic logic behind the check-the-box regulations seems plausible.

The first problem with this analysis is that the four factor test and the check-the-box test are incommensurate, in the sense that they raise different amounts of revenue. The four factor test may be less efficient than check-the-box, but it also raises more revenue. As a general matter, taxes that raise more revenue will have a higher dead weight loss (recall, dead weight loss increases with the square of

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<sup>106</sup> See *supra* note 11.

the tax rate), so it is not immediately apparent that the above analysis can be used to condemn the four factor test.

This is a general problem with applying the models to real decisions. The decision to move a line will often raise or lower tax revenues, and we do not know what offsetting tax law change will be made to keep total revenues constant. For example, changing the border between debt and equity would change the size of the corporate tax base. If the change reduces tax revenues, some other, unknown tax will have to be increased. Additional taxes might be imposed on almost anything to pay for the tax change. Congress could, for example, increase the gasoline tax change the foreign tax credit rules, or lower the child care credit. It is difficult to determine whether a given change is efficient without knowing where the offsetting changes are to be made (and the change in dead weight loss from the offsetting changes).

The models did not have this problem because they automatically adjusted the rates to raise a constant amount of tax revenue. In the Corlett and Hague model, if the tax on one commodity was decreased, a corresponding increase in the tax on the other commodity was required. In the three commodity, two tax model, if B was taxed like C, the rates were set optimally given that constraint and the revenue constraint. If taxing B like C meant that rates had to be raised (above the rate that C would optimally be taxed at if B were independent), the model adjusted the rates and added in the additional dead weight loss. The optimal conditions minimized dead weight loss subject to this feed-back mechanism.<sup>107</sup>

Without knowing where the offsetting revenue change is to be made, it is difficult to determine whether a tax law change is efficient. To solve this problem we need a universal measure of the efficiency of a tax.<sup>108</sup> Then, at least on a rough basis we can assume that a change to a line is appropriate if the new line has an efficiency cost that is better than the median efficiency of the system.

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<sup>107</sup> In the Auerbach model, the government was allowed to impose non-distorting lump sum taxation, which was adjusted to offset the effect of the distorting tax imposed on the commodity.

<sup>108</sup> Alternatively, we could consider only revenue neutral “packages” of tax law changes. This is in a loose sense required under current law. See Elizabeth Garrett, *Harnessing Politics: The Dynamics of Offset Requirements in the Tax Legislative Process*, 65 U. CHI. L. REV. 501 (1998).

Eliminating a tax with a high efficiency cost is likely to be an improvement even if we do not know where the offsetting revenue will be found because, if the tax that raises the offsetting revenue is no worse than the median tax, then the combined change is an improvement. Thus, if the four factor test has a higher efficiency cost than most other sources of revenue, we can conclude that it should be abandoned.

The simplest measure of the efficiency cost of a tax, known as the marginal efficiency cost of funds or MECF, is the change in burden on taxpayers (the marginal burden) caused by a small change in tax receipts.<sup>109</sup> The lower the MECF, the better the tax. It turns out that for small tax changes, the MECF can be calculated based solely on the ratio of the revenue that would be raised from a tax absent any behavioral distortions to the actual revenue raised.<sup>110</sup> This

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<sup>109</sup> See Joel Slemrod & Shlomo Yitzhaki, *The Cost of Taxation and the Marginal Efficiency Cost of Funds*, IMF Staff Papers, Vol. 43., No. 1 (March 1996). The concept of MECF is based on a more generic problem of public finance. If taxes are to finance pure public goods, then the marginal cost of the goods must be adjusted for the marginal distortion engender because the funds for the project must be raised via distortionary taxes. The MECF was developed to measure this cost. See, e.g., Charles L. Ballard & Don Fullerton, *Distortionary Taxes and the Provision of Public Goods*, 6 J. ECON. PERSPECTIVES 117 (1992). The use of the MECF to determine the optimal provision of public goods has recently been challenged. See Louis Kaplow, *The Optimal Supply of Public Goods and the Distortionary Cost of Taxation*, 49 NAT'L TAX J. 513 (1996). The MECF is used here to compare different taxes for the same supply of public goods and the same degree of redistribution (i.e., the same level of taxes) and, therefore, is relevant notwithstanding whether it should be used to determine the level of taxes.

<sup>110</sup> We want to calculate the marginal burden of a tax change for a given change in tax revenue. It is easiest to calculate this using the indirect utility function  $V(p, y)$ , which is utility expressed as a function of prices,  $p$ , and income,  $y$ . By a theorem known as Roy's identity (the intuition for which will

be given below),  $\frac{\partial V}{\partial p_i} = \lambda X_i$ , where  $\lambda$  is the marginal utility of income,  $p_i$  is

the price of commodity  $i$ , and  $X_i$  is the quantity of commodity  $i$  demanded. If we assume fixed producer prices, then the imposition of a tax will increase

prices by the same amount, so that  $dp_i = dt_i$ , so  $\frac{\partial V}{\partial p_i} = \frac{\partial V}{\partial t_i} = \lambda X_i$  The marginal

burden on a tax reform will be the change in utility expressed in dollars (i.e.,

simplification means that the efficiency cost of a tax can be calculated by reference to the “static” and “dynamic” revenue estimates, which are readily available for every tax law change (although they are not routinely computed for regulations). This means policymakers can be told, in real time, the efficiency costs or benefits of a tax change.

For example, we can calculate the MECF for the four factor test based on some simple assumptions.<sup>111</sup> Suppose there are ten similar businesses each of which produces income that, if subject to the corporate tax, would create \$100 of tax liability. In addition, suppose that under the check-the-box regime, six would be corporations with no change in behavior and that under the four factor test, all ten would be corporations. (These numbers are summarized in Table 1.) Taxpayers will change their behavior to avoid corporate status. Suppose that under the check-the-box regime, one taxpayer arranges its business to avoid being publicly traded, so that the actual revenue

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the change in utility divided by the marginal utility of money,  $\lambda$ ). The change in utility is the total differential of the indirect utility function, so using Roy's identity,  $MB = \frac{dV}{\lambda} = \sum X_i dt_i$ . Let  $\delta_i$  be the change in revenue from a small change in tax,  $MR_i dt_i$ . Substituting  $\delta_i$  into the formula for marginal burden,

we get  $MB = \sum \left( \frac{X_i}{MR_i} \right) \delta_i$ . The change in marginal burden for a given

change in tax is the amount in the parenthetical, which is the marginal efficiency cost of funds described in the text.

The key to the statement of MECF is Roy's identity. The intuition behind Roy's identity is as follows. Consider a small increase in the price of a commodity, say a price increase of \$1. How much would a consumer need not to care about the increase? He would need at most \$1 multiplied by the amount of the commodity consumed,  $X$ , because this amount will allow him to consume the identical bundle of goods as before the increase. He might need less because good substitutes might be available, but the upper bound on the change in (money metric) utility from a small change in price is  $\$X$ . Consider a small decrease in price. How much better off is the consumer? At least \$1 multiplied by the amount of the commodity consumed because he can consume the same bundle and keep that amount. Thus, the lower bound on the change in utility for a small change in price is  $\$X$ . The upper bound and lower bound are both  $\$X$ , so the change in utility from a change in price of \$1

<sup>111</sup> I thank Dan Shaviro for suggesting the basics of this example to me.

collected is \$500. Suppose that under the four factor test, four taxpayers alter their business to avoid corporate status, so the total revenue is \$600.

Assume that the public trading line is the law and we want to compute the MECF of the additional tax revenue from adding the four factor test. The MECF is the static revenue change, which is the increase in tax revenues expected from the rule change assuming nobody changes their behavior to respond to the rule, divided by the actual revenue. The increase in revenue absent any rule change is \$500 (assuming the business that avoids the public trading line of the check-the-box rules would be a corporation under the four factor test without any further behavior change). The actual revenue from the rule is \$100, so the MECF is  $\$500/\$100$ , or 5. The MECF of initially imposing the public trading line (i.e., the current check-the-box regime) is  $\$600/\$500$ , or 1.2<sup>112</sup>

Table 1

	Check-the-box	Four Factors
Number of corporations with no changes in behavior	6	10
Actual number of corporations	5	6
Tax collected	\$500	\$600
MECF	1.2	5

The cost of funds for the four factor test is higher than for the check-the box test. This alone does not condemn the four factor test. But if the cost of funds for other taxes is lower than 5, then the other taxes should be used instead of the four factor test. It is this thinking, that the efficiency cost of the additional revenue from the

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<sup>112</sup> The analysis ignores other distortions caused by imposing the corporate tax. For example, some of the five businesses that are taxed as corporations under the check-the-box regime may issue more debt than otherwise. A more complete analysis would consider all the behavior changes resulting from a tax law change.

four factor test is too high, higher than other sources, that underlies the decision to enact the check-the-box regulations.<sup>113</sup>

This calculation used the simplified formula, which relies only on static and dynamic revenue, for determining the MECF. For large tax law changes, this formula may not reflect the cost.<sup>114</sup> The choice between the check-the-box regulations and the four factors may be large enough that a direct calculation of burden might be necessary. Suppose that the cost of avoiding the four factor test is \$30, \$60, \$80, and \$90 for the four taxpayers who avoid it, and over \$100 for the rest (so that they would rather pay the corporate tax than avoid it).<sup>115</sup> Suppose also the one taxpayer who avoids corporate status under the check-the-box rules was one of these four and its cost of avoiding check-the-box was \$80 and it must spend an additional \$10 to avoid the four factors for a total cost of \$90. The increase burden on taxpayers from the four factor test is \$280, which is the sum of the tax paid by the business that is newly treated as a corporation and the cost of avoiding corporate status for the rest. The additional revenue is \$100, so each additional \$1 of revenue increases the burden on taxpayers by \$2.80. The decision to eliminate the four factor test is based on whether other sources of the \$100 have a lower burden.

A second problem is that in the formal models we know all of the relevant information, particularly the starting point from which we were considering reform. For example, the Corlett and Hague model starts from uniform taxation and asks whether we can make an improvement. The Auerbach model starts with an existing distortion around which we determine the remaining taxes. The starting point in these cases is critical. If, in the Corlett and Hague model, the commodity that is a substitute for leisure had a very low

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<sup>113</sup> Another major factor was simplification. The check-the-box rules are viewed as a significant simplification over current law. Administrative costs can readily be incorporated into the MECF. *See* Slemrod, *supra* note 108.

<sup>114</sup> The reason why is the formula depended on Roy's identity, which involved the derivative of the indirect utility function. For a large change in prices, Roy's identity might not hold.

<sup>115</sup> The MECF calculation using the static revenue estimate as a measure of dead weight loss assumed that the dead weight loss of a \$100 tax increase (i.e., becoming subject to the corporate tax created an additional tax liability of \$100 for each taxpayer) was \$100.

tax rate, it might be the case that raising the rate would improve welfare. That is, we cannot conclude that taxing substitutes more similarly than under current law makes lines more efficient unless we make assumptions about the existing distortions and tax rules. We cannot state a simple a priori rule. The appropriate direction of change depends on the starting point for reform.

One must be extremely careful in considering the starting point. Existing tax law imposes numerous distortions that might alter the starting point. Some transactions have been developed solely because of taxes. For example, some have argued that short-against-the-box transactions, in which a taxpayer holds stock while at the same time selling the stock short) would not exist absent taxes.<sup>116</sup> If we tax this transaction it will, therefore, cease to exist. We should not, however, be concerned with this “tax elasticity” because the very existence of the transaction was due to a pre-existing distortion, the use and definition of the realization requirement. In the financial world, in particular, it is difficult to separate “real” transactions that might occur absent tax distortions, with transactions structured solely or substantially around the existing tax law. In these cases, we should not be concerned with the presence or absence of particular transactional forms. Instead, we should look to see whether taxes distort or change the ability of taxpayers to achieve their desired risk and return. Thus, the analysis of the short-against-the-box transaction should examine the effects of taxing the transaction on the lock-in effect and the ability of taxpayers to diversify.

A third pitfall is that we cannot simply interpret the models as suggesting that lines in the tax law should be made harder to avoid. A line can be too hard to avoid, at least from an efficiency perspective. This can happen because there are two components in the dead weight loss triangles (or marginal dead weight loss trapezoids): the width (reflecting elasticity) and the height (reflecting the size of the tax). Taxing a low elasticity item too high is not optimal. We can think of these dimensions as the number of taxpayers that shift their behavior (the width) and the social cost (loss of consumer surplus) for each shift (the height). If a line is too hard to avoid, there may be few shifts but each shift will have a large

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<sup>116</sup> See Edward D. Kleinbard, *Risky and Riskless Positions in Securities*, 71 TAXES 783 (1993).

cost. Making the line easier to avoid effectively reduces the tax on an activity by making it cheaper to avoid the tax. This may reduce dead weight loss even though some additional taxpayers will alter their behavior.

To make this more concrete, suppose the cost of avoiding the check-the-box rules for the single taxpayer who does so is \$99 but the cost of avoiding the four factor test for the four taxpayers who do so is \$10 each. Then the total dead weight loss from the four factors test is less than the dead weight loss from the check-the-box test, despite allowing more taxpayers to avoid the rule and despite raising more revenue. The four factor test is more efficient here than check-the-box. We cannot simply look at how many taxpayers avoid a line. We must also look at the costs of doing so.

Table 2

	Check-the-box	Four Factors
Cost per avoider	\$99	\$10
Number of avoiders	1	4
Dead Weight Loss	\$99	\$40
Revenue	\$500	\$600

The reason why the four factor test is efficient in this example is that it raises revenue while at the same time allowing those who avoid the tax to do so at a low cost. The business that is treated as a corporation has a cost of avoidance that is over \$100, while the four who avoid corporate tax treatment have a cost of avoidance of \$10 each, a dramatic shift. It is the extreme differences among taxpayers that causes this result. The tax raises revenue because the one business cannot avoid it, but it produces low dead weight loss because those who can avoid it, do so easily. These facts may be somewhat unusual. Nevertheless, the basic point remains valid, it is only a question of how often it will occur.<sup>117</sup>

<sup>117</sup> There are a number of other reasons we should be cautious about applying the simplified models to real world problems. For example, the



These last two considerations (knowing the starting point and easy or hard to avoid lines), might be viewed together as second-best problems, and may be a cause of despair.<sup>118</sup> One is forced between the Scylla of simple generalizations that are sometimes wrong and the Charybdis of an approach that is too complex to apply. Nevertheless, if these are the relevant variables, designing a good tax system requires them to be taken into account, at least implicitly and, even if it is hard, it can be done. Academics have the time to study these problems and can recommend solutions based on relevant empirical data.

In addition, we can develop some rules of thumb for real-time analysis by policymakers, rules that while not always correct, are likely in general to point in the right direction. First, the intuition from the models that we be concerned about substitution costs and direct costs is generally correct. The underlying intuition behind the check-the-box rules is well supported. Second, the MECF is a useful policy guide and is relatively easy to compute. Lines with high MECF's are unlikely to be optimal, as common sense might tell you. Lines with low MECF's are more promising. Third, to think about pre-existing distortions, such as the existence of tax motivated transactions, we should focus on the underlying consumption or savings decisions, rather than the transactions themselves. Even these decisions will have pre-existing distortions, but focusing on them avoids the traps of focusing on transactional form.

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conclusions of optimal commodity tax model change in the presence of an income tax. See Atkinson & Stiglitz, *supra* note 86 at \_\_. Similarly, the assumption of fixed producer prices may be unrealistic. The models should be taken merely as ways to clarify thinking and develop intuitions about the efficiency effects of line drawing. Ultimately, any decision regarding a particular line must involve careful thinking about the consequences of the particular decision in light of the relevant facts.

<sup>118</sup> See for example, Charles Mclure, Jr., & George Zodrow, *The Study and Practice of Income Tax Policy*, in MODERN PUBLIC FINANCE, 205 (John M. Quigley and Eugene Smolensky eds. 1994); Robert Haveman, *Optimal Taxation and Public Policy*, id. at 247 ("because of the limitations of optimal income tax theory, policymakers should treat all policy inferences derived from it with circumspection."); Joel Slemrod, *Optimal Taxation and Optimal Tax Systems*, 4 J. ECON. PERSPECTIVES 157 (1990); Angus Deaton, *Econometric Issues for Tax Design in Developing Countries*, in Theory of Taxation for Developing Countries 92-113 (David Newbery & Nicholas Stern, eds. 1987).

This is the type of thinking that goes on at a gut level in tax policymaking every day. It is, for example, consistent with the stated rationale for many tax law changes.<sup>119</sup> Formalizing the intuitions and making them legitimate concern for tax policy can only help the decision makers. Section III below gives some examples of the type of analysis one might use to show that it can be done.

### *5. Summary*

The efficiency analysis given here is only a start. The models need to be refined substantially to be more useful, and application of any models in particular contexts will require substantial information. Nevertheless, the analysis shows that line drawing can be analyzed from an efficiency perspective and that the analysis may be consistent with the common-sense analysis already used by policymakers.

### *B. Efficiency is the Appropriate Criterion*

This previous section showed that it is possible to evaluate line drawing problems by their efficiency. This section argues that evaluating line drawing problems by their efficiency both is appropriate and should be the primary method of analysis. In particular, distributional considerations should be secondary to efficiency in many cases involving line drawing in the tax law

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<sup>119</sup> To take an example from recent legislation mentioned elsewhere in the paper, consider the change the realization rule that requires certain hedging transactions to be treated as realization events. See section 1259. The rationale for this change is that the economics of this class of hedges was substantially identical to that of a sale. Taxpayers could easily avoid sale treatment by using these transactions. See CONF. REP. NO. 220, 105th Cong., 1st Sess. 512 (1997). In other words, selling and hedging of this sort are close substitutes. Inevitably, the legislation just moves the line, but one hopes it moved the line to a place where it is not as easy to substitute transactions.

Another example is the repeal of the so-called General Utilities doctrine. See *supra* note 68. In this case, Congress expanded the corporate tax base, knowing full well that the corporate tax causes economic distortions. The stated logic was, in part the worst sort of platonic thinking, involving the “integrity” of the corporate tax base. Nevertheless, the underlying intuition is that the transactions covered by the General Utilities doctrine were close substitutes for other, higher taxed transactions and that efficiency was improved by taxing these transactions alike, notwithstanding the expansion of the corporate tax base.

because adjustments to the rate structure can and should be made to provide the appropriate distribution of the tax burden. If there are legitimate goals supporting the distinction other than efficiency and redistribution, line drawing should balance these other goals with the efficiency costs.

*1. Efficiency is an Appropriate Criterion*

The argument that efficiency is appropriate for resolving line drawing problems in the tax law is the same as the argument that efficiency is an appropriate norm in other areas of law. If we are concerned with the effect of the law on individuals' welfare, the consequences of the law, efficiency provides an important measure of the effect. This ground is well-trodden and is not worth going over again.<sup>120</sup> Two comments should be made, however.

First, the arguments in favor of efficiency apply directly to line drawing. Where a line is drawn affects welfare and should be evaluated by the consequences. This is true even if one is constrained to leaving many arbitrary rules in place. Welfare should be maximized within the constraints. Professor Levmore is wrong that the existence of immutable arbitrary lines in the corporate tax means one cannot make normative arguments about that area.<sup>121</sup>

Second, many of the objections to efficiency made elsewhere have less weight when applied to line drawing in the tax law. In particular, concerns for rights of individuals or concerns regarding personal liberty are generally less present here than in other areas of

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<sup>120</sup> The literature is vast. See, e.g., RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* (3d ed. 1986); ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* (1988); MARK KELMAN, *A GUIDE TO CRITICAL LEGAL STUDIES*, chs 4-5 (1987); A. MITCHELL POLINSKY, *AN INTRODUCTION TO LAW AND ECONOMICS* (2d ed. 1989); JULES L. COLEMAN, *MARKETS, MORALS AND THE LAW* (1988).

<sup>121</sup> See Levmore, *supra* note 45. Similarly, Fred Schauer treats the legal resolution of Sorites-type legal problems as one of merely drawing an arbitrary line. See Schauer, *supra* note 6. Professor Schauer uses the example of the decision that the smallest constitutional size of a criminal jury is six members and suggests that the decision is arbitrary. *Ballew v. Georgia*, 435 U.S. 223 (1978). (More precisely, he states that there might be good arguments for determining a range of answers, choosing within that range is arbitrary. See *id.* at note 51.) In virtually all cases, however, drawing the line will have consequences and decisions should be made in light of the consequences.

law. For example, it is difficult to conceive of liberty concerns in whether a particular instrument should be classified as debt or equity. Similarly, efficiency has been criticized because it assumes that preferences are exogenous and reasonably well defined (and well-behaved in the sense that they are transitive, continuous, etc). Tax laws unlike, say, the criminal law, however, are not likely to have a major effect on preferences, so an assumption that preferences are exogenous is more reasonable. Thus, it is difficult to see how the distinction between debt and equity affects preferences significantly.<sup>122</sup> Therefore, the line drawing problem can, and should, be analyzed by direct reference to efficiency.

## *2. Distributional Considerations*

The argument for efficiency, as noted above, is that the consequences of rules matter. Analytically, however, it is difficult to separate efficiency from other consequences of a given rule. A welfarist aggregates the welfare of individuals in the society and evaluates rules based on whether they improve welfare. Maximization does not involve separate maximization of efficiency and of other considerations, such as the distribution of wealth. Nevertheless, the suggestion made here is that efficiency alone should be the primary criterion for evaluating line drawing problem.

Consider a change to a line in the tax law and a simultaneous adjustment to the tax rates such that the change is distributionally neutral. If the change in the line improves efficiency, then the combination of the line change and the distributional adjustment is a Pareto improvement. Everyone can be made better off.<sup>123</sup>

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<sup>122</sup> This does not mean that tax law does not change behavior. It clearly does so. Attention to these behavior changes is one of the goals of this paper. But changing behavior by changing relative prices is not the same as changing preferences. For example, where the tax law intentionally changes behavior, such as through a subsidy or tax preference, it is not usually the case that the tax law is intended to change preferences. This is not to say that tax laws never affect preferences. Some social policy may be purposefully designed to change preferences, but this is the exception.

<sup>123</sup> Note that in most cases, an efficiency analysis of line drawing will produce identical results even if, during the analysis, distributional considerations are ignored. The reason why is that the rate adjustments necessary to keep the system distributionally neutral will often not affect the efficiency analysis. This will be true for all changes that do not affect items that

Moreover, achieving redistribution through line drawing will, as a general matter, produce worse results than the procedure just outlined—drawing efficient lines and adjusting the rate. The analysis is based on the argument Professors Kaplow and Shavell made that the tax system is more efficient than the legal system in redistributing. Compare two policies that create equal distributions of wealth or income. The first achieves redistribution by imposing an inefficient tort rule, say one in which the damages vary by the relative wealth of the plaintiff and defendant. The second imposes the efficient tort rule but changes the marginal rate structure of the income tax. The regime with the inefficient tort rule imposes two costs: the increased cost of accidents because the tort rule is inefficient and the dead weight loss caused by redistributive taxation. The regime with the change to the marginal rate structure imposes the same dead weight loss from redistribution but does so without increasing the cost of accidents. By focusing redistributive policies in the tax system, everyone can be made better off.<sup>124</sup>

This argument can be translated into the shape of the tax base itself. Simply substitute the “tax base” for “tort law.” If the scope of tax base is used for redistributive purposes, then the double inefficiency identified by Kaplow and Shavell occurs. Thus, the tax base should be defined as efficiently as possible and the rate structure should be used for redistribution.

This arguments suggest that everyone can be made better off through efficient changes to lines in the tax law and that one can

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are uniquely good or uniquely bad for redistribution. For example, consider a change to the line between debt and equity and suppose that both types of instruments are held exclusively by the wealthy. If the change loses revenue, then, to be distributionally neutral, additional taxes will have to be raised on the rich. But whether the change is efficient or not is unlikely to be effected by the simultaneous increase in tax rates.

<sup>124</sup> In addition, as Professor Bittker noted, inefficiency tends to drive out inequity. See Boris I. Bittker, *Equity, Efficiency, and Income Tax Theory: Do Misallocations Drive Out Inequities*, in *THE ECONOMICS OF TAXATION* (Henry J. Aaron & Michael Boskin, eds. 1980). The reason is that different treatment of different transactions, which may at first appear to be inequitable, will lead to price changes so that the return to all investments is approximately the same (adjusted for risk). The price adjustments create inefficiency, but the inequity is eliminated. Moreover, taxpayers can eliminate the distributional effect of differential taxation by holding diversified portfolios.

often identify these changes without explicit reference to distributional considerations. One might, for example, establish a procedure in which overall tax rates are adjusted for distributional considerations on a regular basis. This type of regular adjustment would allow policymakers to focus on efficiency considerations in other areas.<sup>125</sup>

There are three caveats to this argument. First, it may not be possible to make rate adjustments so that the effect of moving a line is distributionally neutral. For example, many lines in the tax law affect the distribution of income between men and women. It will not always be possible to adjust the rates to eliminate the effect of changing a line that has this effect. In these cases, the analysis must incorporate both distributional and efficiency effects.

Second, the argument assumes that the only efficiency effect of altering the tax rates to achieve more redistribution is directly related to the redistribution. Changing a legal rule to achieve redistribution causes efficiency losses both through the redistribution (i.e., responses in labor supply to the decreased return to work) and through the inefficient legal rule, while changing the tax system only causes efficiency losses from the redistribution. If, however, the tax base is poorly defined, altering the rate structure may cause other distortions. For example, if fringe benefits are not taxed for administrative reasons, increases the progressivity of the tax system may increase distortions in the forms of compensation which may not be present when using some other method of redistribution.

Third, it may not be possible to achieve every potentially desirable degree of redistribution with every tax base. For example, a tax only on wages may not tax the very wealthy at all regardless of the tax rate because they may not have wages, living instead off of only capital income. Thus, in extreme cases, where the line drawing problem would significantly change the scope of the tax base, we might need to consider our ability to achieve appropriate redistributive effects solely through the rate structure.

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<sup>125</sup> In fact, it Congress' perceived the lack of ability to adjust tax rates that has put so much pressure on the distributional considerations of every change in the tax law. See Michael Graetz, *Distribution Tables, Tax Legislation, and the Illusion of Precision*, in DISTRIBUTIONAL ANALYSIS OF TAX POLICY (David Bradford, ed. 1995); and Michael Graetz, *Paint-by-Numbers Tax Lawmaking*, 95 COLUMBIA L. REV. 609 (1995) for a discussion of these pressures.

Despite these caveats, the rule that we should primarily be concerned with the efficiency effects of line drawing and focus redistributive concerns on the rate structure remains generally valid. Thus, absent some other consideration or a special circumstance, the primary goal for line drawing is to make the lines as efficient as possible.

### *3. Other Goals*

There may sometimes be specific goals or norms underlying a given distinction in the tax law and these goals should have an effect on the where lines are drawn.<sup>126</sup> For example, the tax law may prohibit deductions for bribes because we want to discourage this activity. In most cases, these goals are insufficient to determine where lines should be drawn. The base cases are easy and the task for the policy maker is to decide where the line should be drawn outside of the base cases, where the underlying goal is weaker. In these cases, the appropriate line should incorporate both the underlying goal and the efficiency costs of meeting that goal. The analysis above, that line drawing will cause shifts in behavior and efficiency losses is still relevant but the costs of these shifts must be balanced against the other goals being pursued.

For example, Congress recently denied deductions for lobbying expenses. The reason for the denial is unclear in the legislative history, but it must involve a view about the effect of money on political decision making. It is relatively easy to identify some activity as lobbying, but outside of that activity, the question of what is lobbying quickly becomes murky. All speech that takes an opinion and that might influence political decisions is, conceivably, lobbying. In deciding where to draw the line, one must take into account the goals of the rule and the costs of the rule (in this case, both efficiency costs and other costs).

### *4. Summary*

This section demonstrated that line drawing problems can be analyzed in a principled fashion by direct reference to the efficiency of the competing rules. This is true regardless of how arbitrary or

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<sup>126</sup> I do not take a position on the extent to which these goals should themselves reflect efficiency or the distribution of wealth. The argument in the text assumes that in some cases, other goals are appropriate.

how bad the underlying distinction is. For example, most scholars may believe that the distinction between debt and equity produces large distortions in capital structures of corporations, but the distinction can, and should, be made to minimize the costs. The argument for this type of analysis is that the consequences of tax rules matter. Efficiency should be the primary determinant of line drawing because redistributive goals are best addressed through the rate structure. Other social goals that are implemented through the tax law should be included to the extent relevant to the decision.

### III. Examples of Efficient Line Drawing

This section considers some examples of the theories proposed in Section II. The goal is to illustrate the recommended approach rather than provide definitive answers to these problems. In particular, empirical research is needed to determine the appropriate answers and this section includes only (what I hope are plausible) assumptions.

The check-the-box regulations, of course, provide a ready example. As illustrated in Section II above, under plausible assumptions, the check-the-box regulations are efficient. That is, the four factor test had a high marginal efficiency cost of funds and replacements for the revenue raised by the four factor can readily be found. Thus, it was appropriate to move the line between corporations and partnerships to public trading, as was done in the check-the-box regulations.

There are two examples in the academic literature of the type of analysis recommended here. Professor Shaviro examined the realization doctrine from an efficiency perspective in a recent article in the *Tax Law Review*.<sup>127</sup> Shaviro considers potentially offsetting effects of the realization rule. A broad rule means that investments will be more evenly subject to realization, reducing the disparity in tax rates between assets and, therefore, reducing disparities with respect to the taxpayer's initial decision to invest. But a realization rule will increase the lock-in effect and a broad rule will increase it more than a narrow rule. Shaviro then applies this analysis to a

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<sup>127</sup> See Shaviro, *supra* note 5.



number of different transactions that are, or should be, controversial under the realization rule.<sup>128</sup>

In addition, in an article in the National Tax Journal I discussed whether we should tax a short-against-the-box as a realization event.<sup>129</sup> The decision to do so depends on the efficiency benefits, not whether the transaction looks like a sale. The major efficiency cost of the realization rule is the harm from the lock-in effect. Taxing shorts-against-the-box increases the cost of holding stock because tax-free hedging will be more difficult. This will cause some people to sell who otherwise might have held, but it will increase the cost for those who continue to sell. As is familiar from the analysis in Section II, fewer taxpayers will avoid the rule but those who do will have a higher cost. The net effect will depend on magnitudes. The article then considers the administrative costs of the rule and concludes that these costs are sufficiently high that they probably swamp any efficiency benefit.

The other line drawing problem discussed in Sections I and II is the distinction between debt and equity. As noted above, taxpayers and their advisors have been innovative in this area recently, and a number of new securities push the boundary beyond its previous limits, including MIPS, or Monthly Income Preferred Stock. MIPS are an almost perfect substitute for preferred stock but, most tax advisors believe, MIPS are debt for tax purposes, and issuers of MIPS are entitled to a tax deduction for interest payments to the holders. Because they are a close economic substitute with a lower tax cost, MIPS have essentially replaced preferred stock.<sup>130</sup> The question is whether the government should classify MIPS as stock or debt. The Treasury Department thought so and proposed legislation to this effect. The proposal was rejected by Congress.

At first glance, treating MIPS as debt appears to be efficient. If it is a perfect substitute for preferred stock (it is not quite a perfect substitute, but it is close), there is no economic cost in terms of

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<sup>128</sup> Shaviro's analysis is consistent with the spirit of the suggestions made here, but many of the details are different. I do not endorse or criticize any of his suggestions here. Instead his analysis is used as an example of the type of inquiry that should be done.

<sup>129</sup> See Weisbach, *supra* note 41. See *supra* text accompanying note 41 for a discussion of the short- against-the-box transaction.

<sup>130</sup> See Flaherty letter, *supra* note 51.

optimal capital structures to switching to MIPS, and it reduces an inefficient tax, the corporate tax. This is in contrast to concerns about tax-induced over-leveraging in the 1980's. Creating interest deductions then involved using high-yield "junk" debt, which potentially imposed bankruptcy costs on the company. If MIPS is a perfect preferred stock substitute, it imposes no such costs.

The question, however, is somewhat more complicated. There are three pieces to the analysis. First, it is not necessarily true that preferred stock should be treated as debt (which is the effective result of MIPS) if dividends on common stock will not be. That is, it is not necessarily true that the appropriate dividing line between equity and debt is at preferred stock. We cannot simply say that any reduction in the corporate tax is good. Second, even if it is appropriate to treat preferred stock as debt, allowing MIPS to be treated as debt and preferred stock to be treated as equity gives taxpayers an election for the treatment of their investments and it is not clear that electivity is appropriate. Third, if MIPS is not a perfect substitute for preferred stock and we assume for the moment that preferred stock is treated as equity, it may not be appropriate to treat MIPS as debt because the shifting from preferred stock to MIPS will impose some inefficiencies. Consider each issue in turn.

First, there are good arguments that preferred stock should be treated as debt using the analysis outlined in Part II above. The "fixed points," the A and the C, are (1) common stock must be treated as equity, with no deduction for dividends, and (2) most instruments today treated as debt will continue to be treated as debt, with a deduction for interest. The question is whether preferred stock, the B, should be treated as debt or as equity. To make this determination, we must determine the substitution costs (whether preferred stock is a better substitute for debt or for equity) and the direct costs (whether standing alone, an investment with preferred stock characteristics is better treated as equity or debt).

Preferred stock, of course, comes in a variety of different flavors, and the analysis will be different for each. But consider the preferred stock that MIPS replaced. These preferred stocks have a fixed dividend rate (generally payable at the discretion of the board of directors but cumulative), a long term (that is either fixed, perpetual, or callable at the end of the term by the issuer), no right to vote (other than for certain limited purposes) and deep subordination.

Debt instruments can have terms similar to these, but most will lack some of these features. For example, if a debt instrument is deeply subordinated, it will have a shorter term.<sup>131</sup> Common stock will have some similar features but many differences, including participation in the profits of the company and the right to vote. While one would need to perform empirical work to confirm this, my belief is that preferred stock is a better substitute for debt than for equity and, therefore, the substitution costs are reduced if preferred stock is treated as debt.<sup>132</sup>

Moreover, treating preferred stock as debt is likely to reduce the direct costs because the rules for debt taxation, including the deduction for the issuer, are thought to better reflect income (or to be more consistent with the rest of the tax law) than the double taxation imposed by equity taxation. Thus, both factors point in the same direction—preferred stock should be treated as debt for tax purposes.

Second, we must consider whether MIPS should be treated as debt if preferred stock (in its traditional form) must remain as equity. It was not likely the case that the policymakers believed they had discretion to rethink the taxation of preferred stock, even if they believed the above analysis that preferred stock should be treated as debt. Allowing MIPS to be treated as debt in this case means that taxpayers can choose their treatment for the investment, using the MIPS form if they desire debt treatment and the preferred stock form if they desire equity treatment.<sup>133</sup> Electivity has benefits

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<sup>131</sup> The terms on MIPS are as close as an instrument typically can get to preferred stock and still obtain a tax opinion that it is debt. The major difference is that on default on a MIPS, typical debt rights obtain, so that the holders can force the company into bankruptcy, while “default” on a preferred stock typically allows the holders to elect directors.

<sup>132</sup> There are surprisingly few studies of the cross-elasticity of debt and equity, given the importance of this factor for measuring the efficiency costs of the corporate tax. See JANE G. GRAVELLE, *THE ECONOMIC EFFECTS OF TAXING CAPITAL INCOME* 82-84 (199\_) and the sources cited therein. Textbooks on corporate finance treat preferred stock as if it is a debt substitute. *See, e.g.*, RICHARD A. BREALEY & STEWART C. MYERS, *PRINCIPLES OF CORPORATE FINANCE* 360-61 (5<sup>th</sup> ed 1996).

<sup>133</sup> Notwithstanding the interest deduction given debt, structuring an investment as stock is sometimes preferable from a purely tax perspective. For example, if the marginal investor is a corporation, then the yield on the

because it allows taxpayers to choose debt treatment for the investment, which we have already decided is generally appropriate. The cost of electivity is that the effective tax on the investment is lower than if a single treatment were chosen. Electivity will make the tax on this investment (MIPS/Preferred stock) too low, so the choice is between too low a tax (elective treatment) and too high a tax (treatment as equity). Which is worse depends on the magnitudes, but my guess is that treatment as equity is worse.

Third, suppose that MIPS and preferred stock are not perfect substitutes. There will be direct costs and substitution costs. The direct costs of taxing MIPS as equity are higher than for taxing MIPS as debt.

The substitution analysis is more complex. It will depend on the number of taxpayers who switch and the cost per taxpayer. If MIPS is treated as debt, large numbers of taxpayers switch, but the cost of negligible for each. If MIPS were treated as equity, then, depending on the next best substitute, fewer taxpayers will switch, but the cost will be higher per taxpayer. My suspicion is that MIPS is a close enough substitute for preferred stock that the substitution costs are low and that moving the line would not reduce these costs significantly, if at all. That is, the cost of funds for expanding the equity line in this direction is high. This is why the Treasury proposal to tax MIPS as equity raised so little money.<sup>134</sup> If the efficiency costs of substitution from treating MIPS as debt are about the same or lower than treating it as equity, then the analysis is easy. Both factors point in the same direction as the direct costs of treating MIPS as debt are lower than treating it as equity. If treating

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investment might be lower because corporations receive a dividends received deduction. *See* I.R.C. § 243 (dividends received deduction). Depending on the ability of the issuer to use interest deductions, the overall tax on the investment might be lower structured as equity.

<sup>134</sup> For example, the marginal efficiency cost of funds for the Treasury proposal was high. The proposal was projected to raise at most \$189 million over five years (the estimate includes the MIPS proposal and several other debt/equity proposals and is not broken down separately). The estimate determined without behavioral changes would have been many, many times higher. In 1995 alone, \$10.7 billion of MIPS were issued. *See* Flaherty letter, *supra* note 51. The assumption behind the estimates must have been that the line proposed by the Treasury Department was not significantly less elastic than current law (if at all).

MIPS as equity lowered the dead weight loss from substitutions, then the two factors offset one another.

Overall, my suspicion is that it is efficient to treat MIPS as debt and Congress was correct in rejecting the Treasury proposal. This analysis is not based at all on traditional criteria for distinguishing between debt and equity. Instead, it is based on whether treating MIPS as debt is more efficient. Empirical analysis is necessary to confirm (or reject) this analysis. The goal here is merely to give an example of the type of analysis that should be done.

This section shows that efficiency analysis can be done by policymakers. While the analysis is not simple and while it requires information, it should be well within the reach of tax policymakers.

#### IV. Conclusion

This paper provided an analysis of line drawing in the tax law. Basic motivating examples include the line between partnerships and corporations, between debt and equity, between selling and holding. Line drawing is ubiquitous in the tax law. Where it draws lines, the tax law treats similar activities differently, and distinguishing between them is problematic.

The paper argues that traditional analysis of the tax law, including using the platonic meaning of the terms or looking to the Haig-Simons definition of income, ability to pay, or some other traditional tax norm is not helpful for line drawing. As a result, substantial and difficult problems in the tax law have not been adequately analyzed. For example, although the line between debt and equity in part determines the corporate tax base, few articles analyze the line. The corporate tax raises over \$100 billion in tax revenue each year and is thought to impose significant distortions on the economy. The appropriate line between debt and equity can significantly affect these costs.

The major argument of this paper is that where lines are drawn has welfare consequences and lines should be drawn where the consequences are most desirable. In particular, line drawing will have efficiency effects. This paper identifies some of the factors that will determine how lines can be drawn most efficiently. The most important factors are whether the line keeps close substitutes together and whether transactions are taxed appropriately when

considered by themselves (i.e., without regard to line drawing). For example, close substitutes for equity should be taxed like equity and close substitutes for debt should be taxed like debt. We should, however, be somewhat more expansive on the debt side because generally debt taxation will lead to fewer distortions. The models used to develop the intuition need refinement and further work should be done both to identify general efficiency conditions. In addition, each particular line will involve features that make the analysis complex because of second-best considerations.

### Appendix A

#### List of Some Important Lines in the Tax Law

*1. Debt/equity*

Debt is treated differently than equity because payments on debt (interest) are deductible while similar payments on equity (dividends) are not.

*2. Holding/selling*

Income is not taxed until it is realized, which generally means when the asset producing the income is sold. Thus, the tax law treated holding and selling as asset differently.

*3. Independent contractor/employee*

Payments for services from independent contractors are not subject to withholding taxes while similar payments to employees are. Independent contractors are also subject to fewer restrictions on the deduction of work-related expenses. See, for example, I.R.C. §67, imposing a 2% floor on unreimbursed business expenses of employees.

*4. Consumption/business/investment*

Expenses for consumption are not deductible (and do not create basis) but expenses for business or investment are recovered for tax purposes either through an immediate deduction or basis.

*5. Market/imputed income*

Wealth created through market transactions is generally taxable while self-produced wealth or wealth produced from the holding

of durable consumption assets is not. For example, the wealth created through ownership of a home (known as imputed rent) is untaxed while the wealth created through the rental of a home is taxed.

*6. Corporation/partnership*

Corporations are subject to a two-tier tax while partnerships are subject to only a single tax (at the owner level).

*7. Capital gain/ordinary income*

Capital gains are taxed at a lower rate than ordinary income.

*8. Foreign source/U.S. source*

Income from foreign sources is taxed differently in a variety of ways than income from U.S. sources. For example, foreigners may only be taxed by the U.S. government on U.S. source income. Allowances for foreign tax credits for U.S. taxpayers are determined in part by the amount of foreign source income.

*9. Related/unrelated*

Relatedness matters for a variety of purposes in the tax law. For example, losses are not allowed if they are from a sale of an asset to a related party. Corporations must have very specific relationships to be eligible to file consolidated returns.

*10. Recognition/nonrecognition*

Certain transactions that are realization events do not produce gain or loss for tax purposes because they are treated as “nonrecognition” events. Other similar transactions are not nonrecognition events. For example, the exchange of real estate in Kansas for real estate in New York City can qualify as a nonrecognition event (see I.R.C. §1031) but the exchange of IBM stock for Microsoft stock generally will not.

## Appendix B

### Two-Tax, Three Commodity Model

To model the line drawing problem, we modify the standard optimal commodity tax problem so that there are fewer taxes than

commodities. In particular, the three commodity case with two taxes is relevant. We assume that the tax on goods 1 and 3 can vary independently, and we must decide whether good 2 should be taxed the same as good 1 or good 3. Essentially, we must define good 2 as part of good 1 or part of good 3, effectively drawing a legal definition. The model sets the tax optimally to minimize deadweight loss given the revenue constraint and the constraint that there are only two tax rates.

We begin with the partial equilibrium case (in which cross-price elasticities are assumed to be zero) to get an intuition for the results, but it is necessary to examine the general equilibrium case because the cross-price elasticities are relevant.

Both models involve a single consumer economy and, therefore, need not aggregate utilities. The reasons for using a single consumer economy are discussed in the text. Both models also assume that the supply is perfectly elastic.

### 1. *Partial Equilibrium Case*

The standard formula for dead weight loss in a partial equilibrium setting is  $L(t) = \frac{1}{2} \sum_i \varepsilon_i p_i q_i t_i^2$  where  $\varepsilon_i$  is the compensated price elasticity of commodity  $i$ ,  $p_i$  is the price of the commodity,  $q_i$  is the quantity, and  $t_i$  is the unit tax on the commodity. For the intuition behind this formula, see, Harvey S. Rosen, *Public Finance*, (4<sup>th</sup> ed. 1995). The partial equilibrium assumption is that cross-elasticities of demand are zero, elasticities of supply are infinite and the demand curve is linear within the relevant range. The revenue raised from a set of taxes is  $\sum_i p_i q_i t_i = R$ . To simplify notation, let  $p_i q_i = P_i$ .

We want to minimize loss from the tax, subject to a revenue constraint,  $R$ . Form the Lagrangian,

$$H = \frac{1}{2} \sum_i \varepsilon_i P_i t_i^2 + \lambda \left( \sum_i P_i t_i - R \right) \quad (1)$$

The first order conditions are:



$$\frac{\partial H}{\partial t_i} = \varepsilon_i P_i t_i + \lambda P_i = 0 \quad (2)$$

Solving for  $t_i$  produces the familiar Ramsey formula,  $t_i = \frac{\lambda}{\varepsilon_i}$ .

Suppose the number of commodities,  $i$ , is 3 and  $t_1 = t_2$ . Call the combined tax rate  $t_{12}$ . The Lagrangian is:

$$H = \frac{1}{2}(t_{12}^2(\varepsilon_1 P_1 + \varepsilon_2 P_2) + t_3^2 \varepsilon_3 P_3) + \lambda(t_{12}(P_1 + P_2) + t_3 P_3 - R) \quad (3)$$

The first order conditions are:

$$\frac{\partial H}{\partial t_{12}} = \varepsilon_1 P_1 t_{12} + \varepsilon_2 P_2 t_{12} + \lambda(P_1 + P_2) = 0 \quad (4)$$

$$\frac{\partial H}{\partial t_3} = \varepsilon_3 P_3 t_3 + \lambda P_3 = 0$$

Thus,

$$\varepsilon_3 t_3 = t_{12} \left( \frac{\varepsilon_1 P_1 + \varepsilon_2 P_2}{P_1 + P_2} \right) = \lambda \quad (5)$$

Note that  $t_3$  remains inverse to  $\varepsilon_3$ , but  $t_{12}$  is inverse to the weighted average of  $\varepsilon_1$  and  $\varepsilon_2$ .

Let  $\frac{\varepsilon_1 P_1 + \varepsilon_2 P_2}{P_1 + P_2} = \varepsilon_{12}$  and  $P_1 + P_2 = P_{12}$  (These are effectively the weighted elasticity and size of the market for combined "commodity.") We can then express the first order conditions as

$$\varepsilon_{12} t_{12} = \varepsilon_3 t_3 = \lambda \quad (6)$$

which is similar to the standard Ramsey formula. The solution is similar for the case where  $t_2 = t_3$ .

To determine whether it is efficient for good 2 to be taxed like good 1 or like good 3, we must solve for dead weight loss for each grouping and compare. Staying with the case where  $t_1 = t_2$ , we solve for the dead weight loss:

$$L_{12} = \frac{1}{2} R^2 \frac{(\varepsilon_1 P_1 + \varepsilon_2 P_2) \varepsilon_3}{\varepsilon_3 (P_1 + P_2)^2 + (\varepsilon_1 P_1 + \varepsilon_2 P_2) P_3} \quad (7)$$

This can be expressed more simply if we let  $\delta_{12} = \frac{P_1}{\varepsilon_1} + \frac{P_2}{\varepsilon_2}$ . Then the expression for dead weight loss reduces to:

$$L_{12} = \frac{1}{2} R^2 \left( \frac{1}{\delta_{12}} \right) \quad (8)$$

If alternatively,  $t_2 = t_3$ , then we get the equivalent formulas (using similar notation):

$$L_{23} = \frac{1}{2} R^2 \left( \frac{1}{\delta_{23}} \right), \text{ and} \quad (9)$$

$$L_{23} = \frac{1}{2} R^2 \frac{\varepsilon_1 (\varepsilon_2 P_2 + \varepsilon_3 P_3)}{\varepsilon_1 (P_2 + P_3)^2 + (\varepsilon_2 P_2 + \varepsilon_3 P_3) P_1}$$

We want to find the values of  $\varepsilon_2$  for which  $L_{12} < L_{23}$ . To simplify the expression, let all the  $P_i = 1$ . Then, setting the expressions for dead weight loss equal and solving for  $\varepsilon_2$ , we get:

$$\varepsilon_2 = -\frac{1}{2} \left( \varepsilon_1 + \varepsilon_3 \pm \sqrt{\varepsilon_1^2 + \varepsilon_3^2 + 14\varepsilon_1\varepsilon_3} \right) \quad (10)$$

Because elasticities must be negative, there is only a single solution to this equation. (The expression in the square root will be larger than  $(\varepsilon_1 + \varepsilon_3)^2$ , so the value of the square root will be larger than the value of the sum of the first two terms,  $\varepsilon_1 + \varepsilon_3$ , so the only valid solution will be the case where the square root is added to the other elasticities.) Because there are no other solutions, by determining whether  $\varepsilon_2$  is greater than or less than the expression determines whether commodity 2 should be grouped with

commodity 1 or commodity 3. (Which way the inequality cuts will depend on whether  $\varepsilon_1$  is greater than or less than  $\varepsilon_3$ .)

The obvious question is why the dividing point is not half way between the elasticities. That is, the intuition might have been that it is best to group the commodities whose elasticities are closest. This intuition is not correct. The reason why is that the cost of deviating from the optimal tax for a commodity with a high elasticity is higher than the cost of deviating from the optimal tax for a commodity with a low elasticity. This can be seen by determining the marginal dead weight loss with respect to each tax. Thus, the dividing line will be skewed toward the commodity with higher elasticity: commodity 2 should be grouped with the higher elasticity commodity only if its elasticity is somewhat closer to the higher elasticity than the lower elasticity.

### *2. General Equilibrium Case*

The general equilibrium model is based on Tresch, chapter 15, and equations (11) through (21) simply repeat the model in Tresch for convenience of the reader. The model uses the consumer expenditure function rather than the usual indirect utility function (see, e.g., Atkinson & Stiglitz, Chapter 12). The measure of loss is the Hicks compensating variation, which is the difference between the amount of income needed to be given lump sum to the consumer to make the consumer indifferent to taxation and the tax revenue raised. We assume linear technology which will mean fixed producer prices equal to the constant marginal cost and output is perfectly elastic.

Let  $M(\vec{q}, U^\circ)$  be the consumer expenditure function with  $\vec{q}$  the vector of prices  $q_i$  and utility  $U^\circ$ . Then,

$$M = \sum_i q_i X_i(\vec{q}, U^\circ) \quad (11)$$

where  $X_i(\vec{q}, U^\circ)$  is the compensated demand curve for commodity  $i$ .

$M$  gives the lump sum income needed to give an individual utility of  $U^\circ$ .

Note that from standard consumer theory:

$$\frac{\partial M}{\partial q_k} = X_k, \text{ and} \quad (12)$$

$$\frac{\partial M}{\partial q_k \partial q_j} = S_{kj}.$$

The  $S_{kj}$  are the Slutsky substitution terms.  
The tax revenue collected is

$$R = \sum_i t_i X_i(\bar{q}, U^\circ) \quad (13)$$

where  $t_i$  is the unit tax on commodity  $i$ .

Impose a tax  $\bar{t}$ . Then because of the assumption of linear technology,  $q_i = p_i + t_i$ , where  $p_i$  is the producer price for commodity  $i$ . Define the measure of loss  $L$  from a tax as the difference between  $M$  and the tax revenue:

$$L = M - R = \sum_i q_i X_i(q_i, U^\circ) - \sum_i t_i X_i(q_i, U^\circ) \quad (14)$$

Note that this is the Hicks compensating variation measure of loss because  $M$  is evaluated at after-tax prices,  $q_i$ , and is the amount of income needed to keep the consumer at pre-tax utility,  $U^\circ$ , with those prices.

The marginal loss from a small change in a tax is:

$$\frac{\partial L}{\partial t_k} = \frac{\partial M}{\partial t_k} - \frac{\partial \sum_i t_i X_i}{\partial t_k} \quad (15)$$

Because of linear technology,  $dq_k = dt_k$ . That is, in the  $k^{\text{th}}$  market, when  $t_k$  is introduced, the price  $q_k$  will increase by  $t_k$ . In addition, in the  $i^{\text{th}}$  market,  $q_i$  will not change with the introduction of  $t_k$  because neither  $p_i$  nor  $t_i$  can change.

Therefore,

$$\frac{\partial M}{\partial t_k} = \sum_i \frac{\partial M}{\partial q_i} \frac{\partial q_i}{\partial t_k} = \frac{\partial M}{\partial q_k} = X_k \quad (16)$$

$$\frac{\partial \sum_i t_i X_i}{\partial t_k} = \sum_i X_i \frac{\partial t_i}{\partial t_k} + \sum_i t_i \frac{\partial X_i}{\partial t_k} = X_k + \sum_i t_i \frac{\partial X_i}{\partial t_k} \quad (17)$$

$$\frac{\partial X_i}{\partial t_k} = \sum_j \frac{\partial X_i}{\partial q_j} \frac{\partial q_j}{\partial t_k} = \frac{\partial X_i}{\partial q_k} = S_{ik} \quad (18)$$

Therefore,

$$\frac{\partial L}{\partial t_k} = - \sum_i t_i S_{ik} \quad (19)$$

We want to minimize loss, L. Define the Lagrangian

$$H = L(t) + (R - R^*) \quad (20)$$

where  $R^*$  is the fixed revenue constraint.

Then the first order conditions are,

$$\frac{\partial H}{\partial t_k} = - \sum_i t_i S_{ik} - \lambda \left( X_k + \sum_i t_i S_{ik} \right) = 0 \quad (21)$$

$$\frac{\sum_i t_i S_{ik}}{X_k} = \frac{\lambda}{1 - \lambda} = C$$

producing the well-known “equal percentage change” Ramsey formula. The fraction is equal to the percentage change in the demand for  $X_k$  in response to a small change in tax rates.

Impose the additional restriction that  $i = 3$  and  $t_1 = t_2$ , calling the combined rate  $t_{12}$ .

Then

$$\frac{\partial M}{\partial t_{12}} = \frac{\partial M}{\partial q_1} \frac{\partial q_1}{\partial t_{12}} + \frac{\partial M}{\partial q_2} \frac{\partial q_2}{\partial t_{12}} + \frac{\partial M}{\partial q_3} \frac{\partial q_3}{\partial t_{12}} = X_1 + X_2 \quad (22)$$

$$\frac{\partial M}{\partial t_3} = X_3 \quad (23)$$

$$\frac{\partial R}{\partial t_{12}} = X_1 + X_2 + t_{12} \left( \frac{\partial X_1}{\partial t_{12}} + \frac{\partial X_2}{\partial t_{12}} \right) + t_3 \frac{\partial X_3}{\partial t_{12}} \quad (24)$$

$$\frac{\partial R}{\partial t_3} = X_3 + t_{12} \left( \frac{\partial X_1}{\partial t_3} + \frac{\partial X_2}{\partial t_3} \right) + t_3 \frac{\partial X_3}{\partial t_3}$$

In addition:

$$\frac{\partial X_1}{\partial t_{12}} = S_{11} + S_{12},$$

$$\frac{\partial X_2}{\partial t_{12}} = S_{12} + S_{22}, \text{ and} \quad (25)$$

$$\frac{\partial X_3}{\partial t_{12}} = S_{31} + S_{32},$$

Marginal loss from a tax is

$$\frac{\partial L}{\partial t_{12}} = t_{12} (S_{11} + 2S_{12} + S_{22}) + t_3 (S_{31} + S_{32}) = \alpha_{12} \quad (26)$$

$$\frac{\partial L}{\partial t_3} = t_{12} (S_{13} + S_{23}) + t_3 (S_{33}) = \alpha_3$$

The Lagrangian remains:

$$H = L + \lambda(R - R^*) \quad (27)$$

The first order conditions are:

$$\frac{\partial H}{\partial t_1} = \alpha_{12} + \lambda(X_1 + X_2 + \alpha_{12}) = 0 \quad (28)$$

$$\frac{\partial H}{\partial t_3} = \alpha_3 + \lambda(X_3 + \alpha_3) = 0$$

Solving, we get:

$$\frac{\alpha_{12}}{X_1 + X_2} = \frac{\lambda}{1 - \lambda}, \text{ and} \quad (29)$$

$$\frac{\alpha_3}{X_3} = \frac{\lambda}{1 - \lambda}$$

This can be expressed as:

$$\frac{t_{12}(S_{11} + S_{21}) + t_{12}(S_{12} + S_{22}) + t_3(S_{13} + S_{23})}{X_1 + X_2} = C, \text{ and} \quad (30)$$

$$\frac{t_{12}(S_{31} + S_{32}) + t_3 S_{33}}{X_3} = C$$

This has a similar interpretation to the usual Ramsey rule, except now the effects on  $X_1$  and  $X_2$  are combined.

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David Weisbach  
University of Chicago Law School  
1111 East 60<sup>th</sup> Street  
Chicago, IL 60637



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