TRANSFER TAX VALUATION ISSUES, THE GAME THEORY, AND FINAL OFFER ARBITRATION: A MODEST PROPOSAL FOR REFORM

Jay A. Soled, Esq.*

One of the most difficult tasks of federal tax administration is determining the value of closely-held business interests where there is no readily available market quotation. The Internal Revenue Code ("Code")[1] and accompanying regulations provide little guidance:[2] The Code offers a broad definition of value[3] and the applicable Treasury regulations requires a willing buyer/willing seller test.[4] In practice, however, these guideposts often fail to generate a consensus between taxpayers and the Internal Revenue Service ("Service").[5] A common by-product of this failure is prolonged litigation,

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* Jay A. Soled (J.D. University of Michigan, *cum laude* (1988); LL.M. (Taxation) New York University (1989)) is an assistant professor at Rutgers University Faculty of Management. The author would like to thank Mary Goldhirsch, Esq. for reviewing this manuscript and offering valuable comments and insight.

1. All references in this analysis are to the Internal Revenue Code of 1986, as amended.

2. This is not to say that the task of defining value is an easy one. "Valuation is not an exact science; it is "sophisticated guess work." Not only are there many different methods of valuation, but variations in the use of each method may lead to widely different results." ROBERT W. JOHNSON, FINANCIAL MANAGEMENT 502 (4th ed. 1971). *See also* James C. Bonbright, *The Problem of Judicial Valuation*, 27 COLUM. L. REV. 493, 509 (1927) ("One of the most perplexing problems in judicial valuation arises...with the attempt to value specific portions of a whole property."). Judge Frank once succinctly commented that "[r]eams of good paper and gallons of good ink have been wasted by those who have tried to give [value] a constant and precise meaning." Commissioner v. Marshall, 125 F.2d 943, 946 (2d Cir. 1942). He added, "[t]he truth is that [value] has different meanings in different contexts, even in the restricted field of 'tax law.' And there, as almost always, 'value' involves a conjecture, a guess, a prediction, a prophecy." *Id.* at 946.

3. I.R.C. § 2031(a) provides "[t]he value of the gross estate of the decedent shall be determined...at the time of his death of all property, real or personal, tangible or intangible, wherever situated." I.R.C. § 2031(b) adds:

> [i]n the case of stock and securities of a corporation the value of which, by reason of their not being listed on an exchange and by reason of the absence of sales thereof, cannot be determined with reference to bid and asked prices or with reference to sales prices, the value thereof shall be determined by taking into consideration, in addition to all other factors, the value of stock or securities of corporations engaged in the same or a similar line of businesses which are listed on an exchange.

The corresponding gift tax section, I.R.C. § 2512(a), provides "[i]f the gift is made in property, the value thereof at the date of the gift shall be considered the amount of the gift."

4. Treas. Regs. §§ 20.2031–1 (as amended in 1965) and 25.2512–1 (as amended in 1992) define "fair market value" as "the price at which [the] property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or sell and both having reasonable knowledge of relevant facts."

5. *See infra* text accompanying notes 16–32.

marked by "Solomon-like" pronouncements, as judges tend to split warring parties' valuation differences.[6] But, unlike the judgment rendered by King Solomon, litigants involved in these valuation disputes rarely venerate the wisdom of these valuation decisions or the process by which they were derived.[7]

If we assume that Congress has no inclination to change its half-century old willing buyer/willing seller test,[8] reform must take a different tack. To stem the tide of valuation litigation, this analysis proposes that Congress legislatively adopt final-offer arbitration, where a judge must choose either the taxpayer's or Service's valuation proposal. Judges would be precluded from reaching a compromise position. The reason for this limitation is based on game theory, a branch of social science that studies strategic decision-making. Game theory analysis reveals that the judiciary's propensity to compromise (or the perception of such) causes each party to exaggerate their initial valuation estimates and that these exaggerated estimates lessen the likelihood of the taxpayer and Service settling their differences.

Section I of this analysis outlines the problem of valuing closely-held business interests. Next, Section II summarizes game theory analysis and applies it to the current adjudication process. Section III further applies game theory analysis to final offer arbitration. Section IV concludes with a modest proposal that final offer arbitration be tested on a limited basis in the gratuitous transfer tax chapters of the Code.

I. BACKGROUND

The crux of Chapters 11, 12 and 13 of the Code, which deal with estate, gift and generation-skipping transfer taxes, concerns issues of valuation. In each chapter, the rate of tax applies to the value of property transferred.[9] Furthermore, Chapter 14 of the Code, which broadly applies to the prior three chapters, is devoted entirely to the issue of valuation.[10]

In some instances, the determination of fair market value is an easy task. When it comes to marketable securities, for example, Treasury regulations provide a simple formula.[11] In other instances, such as those involving the transfer of closely-held business interests, however, no simple formula is available. The drafters of the Code and Treasury regulations instead invite their readers to take a journey to an imaginary land where hypothetical buyers and

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6. *See infra* text accompanying notes 33–43.

7. *See* Edward N. Polisher, *Effect of Estate, Inheritance and Gift Taxes on Business Development and Survival*, TAX'N & BUS. CONCENTRATION 175, 184 (1952) ("The results of the decisions seem to have placed the courts in the position of arbitrator...resulting usually in a compromise figure existing between two extremes....").

8. *See infra* note 59. The original test read as follows: "The fair market value is the price at which property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell." Treas. Reg. § 67, Art. 7(1) (1924); T.D. 3648, 26 Treas. Dec. Int. Rev. 1162, 1166 (1924); Treas. Reg. § 68, Art. 13(a)(1) (1924); T.D. 3683, 27 Treas. Dec. Int. Rev. 81, 95 (1924).

9. I.R.C. §§ 2001(b), 2501(a), 2621(a).

10. *Id.* §§ 2701–2704.

11. "In general, if there is a market for stocks...on a stock exchange, in an over-the-counter market or otherwise, the mean between the highest and lowest quoted selling prices on the [valuation date] is the fair market value per share...." Treas. Regs. §§ 20.2031–2(b)(1) (as amended in 1992), 25.2512–2(b) (as amended in 1976).

sellers engage in commerce. In such a place, the question the drafters pose is what value the transferred interest in question would command had it been sold. Taxpayers, applying foresight, are then asked to discern this value.

To assist taxpayers in this hypothetical task, Treasury regulations and the Service instruct taxpayers to determine value by means of a two-step process.[12] In the first step, the taxpayer must determine the value of the entire business based on a number of factors, including, but not limited to, the book value of underlying assets, the business' current and potential earning power, the business' dividend record, and the values of similar businesses.[13] The Service points out that no one factor is determinative; each must be weighed and evaluated in the aggregate.[14] Although the valuation determination of a closely held business is not a precise process, the taxpayer and Service often reach a corresponding result. This correspondence between the taxpayer and Service is normally stipulated to when the parties litigate.[15]

When the taxpayer owns less than the entire business there is another step to the valuation analysis.[16] Unlike the first step, during the second step the taxpayer and Service disagree about valuations much more often. The second step involves adjusting the value of the business determined in the first step by a number of factors to account for the taxpayer's partial ownership interest. In making adjustments, courts typically consider the following three factors: (i) control,[17] (ii) marketability,[18] and (iii) blockage.[19]

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12. Treas. Regs. §§ 20.2031–2 (as amended in 1992), 20.2031–3 (1992), 25.2512–2 (as amended in 1976) and 25.2512–3 (1958). *See also* Rev. Rul. 59–60, 1959–1 C.B. 237.

13. Rev. Rul. 59–60, *supra* note 12.

14. *Id.*

15. *See, e.g.*, Estate of McLendon v. Commissioner, 66 T.C.M. 946 (1993); Estate of O'Keeffe v. Commissioner, 63 T.C.M. 2699 (1992); Moore v. Commissioner, 62 T.C.M. 1128 (1991); Berg v. Commissioner, 61 T.C.M. 2949 (1991); Ward v. Commissioner, 87 T.C. 78 (1986); Estate of Sels v. Commissioner, 52 T.C.M. 731 (1986).

16. *See generally* James R. Repetti, *Minority Discounts: The Alchemy in Estate and Gift Taxation*, 50 TAX L. REV. 415 (1995).

17. Rev. Rul. 59–60, *supra* note 12, includes in the factors to consider "the size of the block of stock to be valued," and also states that "control of a corporation, either actual or in effect, representing as it does an added element of value, may justify a higher value for a specific block of stock."

Control premiums are related to majority ownership and voting dominance. Control affords the business interest holder management power. David O. Smith, *Closely Held Stock: Corporate Control Gains Importance as Element of Stock Valuation*, 4 TAX'N FOR LAW. 78 (1975); *See also* Estate of Cloutier v. Commissioner, 71 T.C.M. (CCH) 2001, 2003 n.4 ("A control premium reflects a shareholder's ability to control a corporation through his or her dictation of its policies, procedures, or operations."). In the words of one court, control enables the business holder to "unilaterally direct corporate action, select management, decide the amount of distribution, rearrange the corporation's capital structure, and decide whether to liquidate, merge, or sell assets." Estate of Newhouse v. Commissioner, 94 T.C. 193, 251–52 (1990). Beyond the power to dictate corporate policy, control offers the business owner insurance against poor management; control further enables the business owner the opportunity to make the best decisions without being second-guessed. William D. Andrews, *The Stockholder's Right to Equal Opportunity in the Sale of Shares*, 78 HARV. L. REV. 505, 526 (1965). Finally, control opens an avenue for the majority shareholder to self-deal at the possible expense of the other interest holders. *Id.* at 509–12.

The converse of owning a controlling interest is to own a noncontrolling or minority interest. Instead of one's interest commanding a control premium, it bears a discount. There are usually two justifications offered for minority discounts. First, a minority interest is considered worth less because its owner has little say in management decisions. Second, a minority shareholder has little protection from a controlling interest holder engaging in self-dealing.

Accounting for these factors ordinarily results in a premium or a discount attaching to the value of a taxpayer's transferred interest. The size of these adjustments vary immensely.[20] Taxpayers do not typically respond passively to these potential adjustments.[21] Rather, through a series of stratagems, taxpayers often actively seek to maximize discounts and minimize premiums, thereby reducing the value of their business interests subject to transfer tax.[22] In other words, contrary to the norm, in the context of transfer tax, taxpayers seek to diminish the value of their business holdings.

This analysis begins with a representative court case. This case illustrates taxpayers' effectiveness in reducing the value of their business interests by application of adjustments. Following this example, this analysis reviews a series of prior studies which offer inconclusive evidence of whether judges tend

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Comment, *Valuing Closely Held Stock: Control Premiums and Minority Discounts*, 31 EMORY L.J. 139, 152–54 (1982).

18. Interests that are not actively traded usually command a lower price because they are more difficult to sell and there is usually less available information regarding their financial strengths and weaknesses. George S. Arneson, *Nonmarketability Discounts Should Exceed Fifty Percent*, 59 TAXES 25 (1981); J. Michael Maher, *Discounts for Lack of Marketability for Closely Held Business Interests*, 54 TAXES 562 (1976).

19. Value established by reference to market prices on a unit basis must be adjusted to take into account the size of business interest being transferred based on the realities of the marketplace and the dynamics of supply and demand. John G. Steinkamp, *Fair Market Value, Blockage, and the Valuation of Art*, 71 DENV. U. L. REV. 335 (1994). *See also* Treas. Regs. §§ 20.2031–2(e) (as amended in 1992), 25.2512–2(e) (as amended in 1976). The former Treasury Regulation § 20.20312(e), for example, stated:

> In certain exceptional cases, the size of the block "of stock" to be valued in relation to the number of shares changing hands in sales may be relevant in determining whether selling prices reflect the fair market value of the block of stock to be valued. If the executor can show that the block of stock to be valued is so large in relation to the actual sales on the existing market that it could not be liquidated in a reasonable time without depressing the market, the price at which the block could be sold as such outside the usual market, as through an underwriter, may be a more accurate indication of value than market quotations.

20. Some adjustments are relatively minimal (*e.g.*, Estate of Simpson v. Commissioner, 67 T.C.M. 2938 (1994) (allowing 10% lack of marketability discount for noncumulative preferred stock)), while others are quite large (*e.g.*, Estate of Frank v. Commissioner, 69 T.C.M. 2255 (1995) (holding that a 30% lack of marketability discount and then a 20% minority interest discount for a combined 45% discount were appropriate under the circumstances)). The size of the adjustments depends on a number of factors, including "put" rights, dividend payments, potential buyers, size of block, prospects of public offering or sale of company, and restrictive transfer provisions. SHANNON P. PRATT ET AL., VALUING A BUSINESS: THE ANALYSIS AND APPRAISAL OF CLOSELY HELD COMPANIES 358–59 (3d ed. 1996).

21. *See* John A. Wallace, *Now You See It, Now You Don't—Valuation Conundrums in Estate Planning*, 1990 MIAMI INST. ON EST. PLAN. 8–47 ("The authorities examined in this article illustrate that many actions taken by taxpayers in positioning their investment and business assets secure significant transfer tax advantages because those acts depress the value of the property interests involved."); Henry J. Aaron & Alicia H. Munnell, *Reassessing the Role for Wealth Transfer Taxes*, 45 NAT'L TAX J. 119, 137 (1992) ("Placing a low estimate on the value of [stock] is perhaps the most popular way to avoid taxes.").

22. Practitioner's journals tout the use of these discounts. *See e.g.*, John A. Bogdanski, *Dissecting the Discount for Lack of Marketability*, 23 EST. PLAN. 91 (1996); Anne K. Hilker & John M. Olivieri, *Estate and Gift Taxation of Interests in Closely Held Businesses: Maintaining Control and Avoiding Control Premiums*, 21 TAX MGMT. EST., GIFTS & TR. J. 66 (1996); George S. Arneson, *Nonmarketability Discounts Should Exceed Fifty Percent*, 59 TAXES 25 (1981); J. Michael Maher, *Discounts for Lack of Marketability for Closely Held Business Interests*, 54 TAXES 562 (1976). Even the popular press has heralded the use of these adjustments. *See, e.g.*, Robert Bryce, *When It's Time to Bring Family into the Family Business*, N.Y. TIMES, Sept. 24, 1995, at B11.

to reach compromise solutions. Finally, other proposals to curtail valuation disputes are surveyed.

A. Example

Valuation adjustments ordinarily provide taxpayers with the opportunity to transfer valuable business interests at a reduced transfer tax cost.[23] Some commentators refer to this phenomenon as the disappearing value syndrome, where the parts of a transferred business or property interest are worth less than the sum of the whole.[24] *Whittemore v. Fitzpatrick*[25] illustrates how taxpayers may strategically employ the use of these valuation adjustments to mitigate their transfer tax exposure.

In *Whittemore*, the taxpayer owned all 820 outstanding shares of J.H. Whittemore Co., a holding company.[26] The company held assets with a fair market value of over two and a half million dollars. The taxpayer, by way of gift, transferred 600 of these shares to a single trust for the benefit of his three sons. For gift tax purposes, the taxpayer determined the value of each share to be $1,000. On audit, the Service determined the value of the shares instead to be $3,228. The vast difference between the taxpayer's estimated price per share of the company and the Service's value per share was attributable to the fact that the Service was unwilling to take into account any valuation adjustments relating to control, marketability or blockage.[27]

In a case described by the court as one of first impression, the district court held in favor of the taxpayer and permitted the following series of discounts:

1. Blockage. An eleven percent blockage discount on a major block of stock owned by J. H. Whittemore Co. in another company.[28]

2. Marketability. A fifty percent marketability discount to account for the fact that many of J.H. Whittemore Co.'s other assets were illiquid (e.g., a family art collection), such that a prospective buyer would likely be dissuaded from purchasing an interest in the company.[29]

3. Control. A sixteen percent minority discount to account for the fact that the shares in question were for the benefit of the taxpayer's three sons, such that none would have control after the transfer.[30]

When all three of these adjustments were tallied, the value of each share was determined to be $1,057, rather than the Service's pre-adjustment value of $3,228 per share.[31] In the final analysis, the shares gifted to the trust for the benefit of the taxpayer's three sons were discounted by approximately two-thirds of their pre-adjustment value.[32]

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23. Aaron & Munnell, *supra* note 21, at 137 ("At the second stage, a series of special factors are considered that can cause fair market value to diverge from step-1 estimates.").
24. *See* Wallace, *supra* note 21, at 8–4 to 8–5.
25. 127 F. Supp. 710 (D. Conn. 1954).
26. *Id.* at 711.
27. *Id.* at 713.
28. *Id.* at 721.
29. *Id.*
30. *Id.*
31. *Id.* at 722, 713.
32. *Id.* at 722.

The *Whittemore* decision represents one side of the coin. Just as taxpayers may opt to use valuation adjustments to their advantage, with somewhat less frequency, these adjustments are also exploited by the Service. On the one hand, the Service may propose that a business interest should command an upward adjustment in the form of a control premium.[33] On the other hand, when it is to its advantage, the Service may advocate for a minority or marketability discount to attach to a business interest.[34]

Putting aside the merits of these valuation adjustments,[35] the current adjudication process most likely does not promote fairness or expedient use of judicial resources. In every valuation duel, each party draws its sword, parades its experts and offers their reports.[36] Litigants employ these tactics not only to buoy each one's own valuation proposal, but also to cast doubt on the other party's determination. In the end, the process fails because it idealistically presupposes that fair market value can be determined even in the absence of the intense scrutiny of an actual market. The absence of an actual market necessitates another approach, where the selected value represents a choice between two vying alternatives.

Prior studies of court decisions reveal that the existing practice of determining value potentially invites "horse-trading," whereby judges tend to split valuation differences. Compromised outcomes (and even the perception of such), however, undermine the integrity of the judicial system.[37] They foster judicial opinions that have a insincere ring because no judge can really say that

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33. *See, e.g.*, Ahmanson Found. v. United States, 674 F.2d 761 (9th Cir. 1982) (Service successfully argued that a control premium should attach to decedent's 60% controlling interest).

34. *See, e.g.*, United States v. Parker, 376 F.2d 402 (5th Cir. 1967) (Service argued that a noncontrolling interest in company should be discounted).

35. The merit of these adjustments is beyond the scope of this analysis. At least one commentator views the outcome of *Whittemore* with scorn, suggesting that the court's discounts amount to little more than an evisceration of the gift and estate tax system.

> Mr. Whittemore's gift tax (assuming no other gifts) was thereby reduced by approximately $400,000. Moreover, if, on his death, his remaining 220 shares were valued in the same way, he stood to save another $158,000 in estate tax. The aggregate gift and estate tax bill on this $2.65 million fortune under pre-1976 law (and assuming no marital deduction) would have been only $187,000, which is an effective rate of 7%. The same transactions after the Tax Reform Act would bear a slightly higher tax, $247,000, which is an effective rate of only 9%.

George Cooper, *A Voluntary Tax? New Perspectives on Sophisticated Estate Tax Avoidance*, 77 COLUM. L. REV. 161, 198 (1977).

36. Judge Tannenwald has commented on the unfortunate nonproductivity of the entire enterprise:

> In this case, as in other significant section 482 cases before the Court in recent years, each party has spent most of the time attacking the other party's allocation formula rather than establishing the soundness of its or her own formula. In pursuing this path, an unduly long and unnecessarily complicated trial record has been created, replete with bickerings between counsel over unimportant and often irrelevant evidentiary questions and a continuance of "play your cards close to the chest" attitude of petitioner's counsel and the lack of focus on the part of respondent's counsel exhibited during the discovery process. Both of these elements seemingly reflect a strategy of telling the judge as little as possible.

Perkin-Elmer Corp. v. Commissioner, 66 T.C.M. 634, 657 (1993).

37. *See* Joseph D. Hartwig, *Valuation Problems Before the Internal Revenue Service and the Tax Court*, PROC. N.Y.U. THIRTEENTH ANN. INST. ON FED. TAX'N 1143, 1144 (1955) ("experience has taught [practitioners] that a valuation dispute boils down to a simple question of "horse-trading").

$X represents the fair market value of a transferred interest if there is no willing buyer or, for that matter, a willing seller.[38] There is a general recognition that $X, at best, represents an approximation of fair market value and, at worst, mere conjecture that may be far from the mark.[39]

B. Prior Studies

Two valuation studies, among others, reveal findings that courts tend to compromise valuation estimates.[40] The first study, conducted by Professor Chelcie Bosland, reviewed 106 of 133 separate valuation decisions handed down by the Tax Court between 1944 and 1960.[41] Most of these decisions involved gratuitous transfers.[42] A summary of Bosland's findings evidences the Tax Court's propensity to compromise.

> Of the 133 ownership (largely stock) interests whose values were determined by the Court, 27, or 20 per cent, were found by the Court to be exactly the same as the taxpayer's claim, and an additional ten cases (or eight per cent) were less than ten per cent higher than claimed by the taxpayer. Likewise, a total of 27 court-determined valuations (20 per cent) were identical with the values fixed by the tax authorities, and an additional five (four per cent) were less than ten per cent lower than the Service claimed. Thus, a total of 28 per cent of the 133 valuations were found to be at or within ten per cent of the taxpayers' claims, while

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38. Some judges have been forthright in recognizing their own limitations in making valuation determinations and have struck an honest cord in their opinions. *See* Elverson Corp. v. Helvering, 122 F.2d 295, 298 (2d Cir. 1941):

> The taxpayer called four experts, the Commissioner two, and the Board appraised the shares at the same value as that given by the lower of the Commissioner's experts, though not for the same reasons as he. The value of the shares depended, as all value does, upon their future earning power, obviously a highly speculative matter as to which no forecast is much better than a guess. We cannot say that the figure taken was so unreasonable that we must upset it; an attempt by us to fix another would not be likely to strike nearer the unattainable mark.

Others judges have not. *See* Vereen v. Allen, 75 F. Supp. 406, 407 (D. Ga. 1947) (the entire rationale of the court is expressed in the following conclusory statement: "I find the fair market value of said stocks and bonds, as of the date of decedent's death, to be as follows: Moultrie Banking Company, $200 per share' Moultrie Cotton Mills, $105 per share, Riverside Mfg. Company, $150 per share, Moultrie Grocery Company, $100 per share, Moultrie Hotel Corporation bonds, 25% of their par value.").

39. *See e.g.*, Estate of DuPuy v. Commissioner, 9 T.C. 276, 284 (1947) ("The evidence does not lead irresistably to any amount as the obviously correct value, but, since a finding of precise amount must be made, the Court has concluded, after considering all of the evidence in the case, that the value of the stock on the valuation dates was $1,300 per share."); Marcello v. Commissioner, 43 T.C. 168, 182 (1964) ("[W]e have no deep-seated conviction as to what the value of the [stock] may have been on the date of sale, but a finding of value is necessary and has been made to the best of our ability.").

40. Other studies echo the findings of the two discussed. In one such study, 10 percent were settled in favor of the taxpayer, 56 percent in favor of the Commissioner, and the balance or 34 percent were compromised. Hackett, *Discriminatory Effect of Estate Taxes on Small Business*, TAX'N & BUS. CONCENTRATION 197 (1952). In another study, roughly half the cases were purportedly decided by compromise. Emanuel L. Gordon, *Problems of Valuation in Tax Court Trials*, PROC. N.Y.U. DECENNIAL INST. ON FED. TAX'N, 777 (1952). Finally, another study, analyzing valuation decisions handed down between 1925 and 1946, likewise found that courts compromise their decisions approximately half the time. J. KEITH BUTTERS ET AL., EFFECTS OF TAXATION: CORPORATE MERGERS 87 (1951).

41. Chelcie C. Bosland, *Tax Valuation By Compromise*, 19 TAX L. REV. 77, 81 (1963).

42. *Id.* at 81 (other cases that were part of the study, for example, involved valuation issues with respect to the realization of income).

> another 24 per cent were that close to the claims of the Government. This leaves something less than half of the decisions within the broad range of "compromise...."[43]

In a related study, Professor Nina Crimm examines the problems and influences that accompany the use of partisan expert witnesses involving valuation issues.[44] In this study Crimm reviewed a series of valuation cases rendered between 1985 and 1990.[45] Her findings indicate that in a significant number of cases where expert witnesses were involved, the Tax Court often sided with one party or the other,[46] and, furthermore, these decisions often tended to favor the position of the Service.[47] Crimm attributes her findings to (i) the Service's having had the more convincing expert, (ii) the Service's failing to settle cases it presumes to be a "winner," and (iii) the taxpayer having the burden of proof in these matters.[48]

Bosland and Crimm conducted their studies from a different pool of cases (i.e., 1945–1960 versus 1985–1990) and were conducting their research for different reasons. These two facts may help explain a possible reason for their different findings. Their findings may also reflect an evolving trend where judicial frustration over having to handle these valuation disputes has led some courts to choose one side over the other, rather then resorting to a compromise value.[49] Whatever the reason for the somewhat disparate results,

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43. *Id.* at 81–82. To facilitate review of her findings, Bosland supplies the following chart:

VALUATION FINDINGS OF THE TAX COURT FROM 1944 THROUGH 1960

	Number of Valuations	Per cent
1. Exactly the same as taxpayers's witness	27	20
2. Within ten per cent more than taxpayer's witness	10	8
3. Within ten per cent less than I.R.S. witness	5	4
4. Exactly the same as I.R.S.	27	20
5. Somewhere between the range of 2 and 3 above	64	48
Total	133	100

Id. at 82.

In her analysis, Bosland suggests that the compromise trend is even stronger than these figures reveal because a number of cases that were decided directly in either the taxpayer's or government's favor did not lend themselves to a compromised outcome. *Id.* at 83.

44. Nina J. Crimm, *A Role for "Expert Arbitrators" in Resolving Valuation Issues Before the United States Tax Court: A Remedy to Plaguing Problems*, 26 IND. L. REV. 41 (1992).

45. *Id.* at 46.

46. *Id.* at 50.

47. *Id.* at 51.

48. *Id.* at 52.

49. In Buffalo Tool & Die Mfg. Co. v. Commissioner, 74 T.C. 441 (1980), Judge Tannenwald, expressing frustration that taxpayers and the Service sometimes take overzealous positions in hope that the court may find some middle ground, stated:

> As the Court repeatedly admonished counsel at trial, the issue is more properly suited for the give and take of the settlement process than adjudication. The existing record reeks of stubbornness rather than flexibility on the part of both parties, based upon an overzealous effort...to infuse a talismanic precision' into

there still remains a perception (and more likely a reality) in the tax world that taxpayers play the valuation field aggressively.[50] Perhaps the taxpayers' cavalier attitudes are based on their hopes that they will not get audited. Even if audited, taxpayers also recognize that all may not be lost: they still may be able to broker an administrative compromise with the Service, prevail in court, or succeed in convincing a judge or jury to split their valuation differences with the Service.

C. Prior Proposals

Many prior proposals concerning the valuation of closely-held businesses expressly question the legitimacy of secondary valuation adjustments (i.e., control, marketability and blockage), especially in the context of intra-family transfers (the most common context in which valuation disputes arise). Theorists tendering these proposals speculate that in context of family, the willing buyer/willing seller test often creates a false trial and therefore should be abandoned. Other theorists offer solutions to the problem of valuation that are independent of the issue of family.

One school of thought, represented by Professor Alan Feld, contends that the current transfer tax system ignores the mutuality of interest that exists between a donor and donee in the family context.[51] Feld points out that gifts and bequests are made based on the clear expectation on the part of the donor that the donee will act in unison with the donor's wishes.[52] Feld claims that no one in business needlessly welcomes a dissenting voice. This fact, Feld propounds, should prohibit a court from making adjustments such as those for control without the donee/taxpayer having to show that the donee/taxpayer confronts the same environment as would an outsider.[53]

> their respective views as to valuation. We are convinced that the valuation issue is capable of resolution by the parties themselves through an agreement which will reflect a compromise Solomon-adjustment, thereby saving the expenditure of time, effort and money by the parties and the Court—a process not likely to produce a better result. *Indeed, each of the parties should keep in mind that, in the final analysis, the Court may find the evidence of valuation by one of the parties sufficiently more convincing than that of the other party, so that the final result will produce a significant financial defeat for one or the other, rather than a middle-of-the-road compromise which we suspect each of the parties expects the Court to reach.* If the parties insist on our valuing any or all of the assets, we will. We do not intend to avoid our responsibilities, but instead seek to administer them more efficiently—a factor which has become increasingly important in light of the constantly expanding workload of the Court.

Id. at 451–52 (emphasis added).

Numerous other courts have tacitly followed what has become known as the *Buffalo Tool & Die* Principle. Estate of Gallo v. Commissioner, 50 T.C.M. (CCH) 470 (1985); Estate of McGill v. Commissioner, 48 T.C.M. (CCH) 239 (1984); Chiu v. Commissioner, 84 T.C. 722 (1985); Sirloin Stockade, Inc. v. Commissioner., 40 T.C.M. (CCH) 928 (1980); Strutz v. Commissioner., 40 T.C.M. (CCH) 757 (1980). *But see* Jay A. Soled et al., *Almost Two Decades Later,* Buffalo Tool *Admonishments Still Largely Ignored,* 75 TAXES 65 (1997) (study indicates that courts are prone to compromise valuation differences despite the warning issued in *Buffalo Tool*).

50. *See infra* note 21.

51. Alan L. Feld, *The Implications of Minority Interest and Stock Restrictions in Valuing Closely-Held Shares,* 122 U. PA. L. REV. 934 (1974).

52. *Id.* at 937.

53. Instead, Feld proposes that

> [t]he proper response to this situation may be a presumption that a donor or

Other commentators share Professor Feld's misgivings with respect to secondary valuation adjustments.[54] They, however, advocate a legislative approach to address the issue of secondary adjustments.[55] Reform, they posit, would require incorporating formulae to account for a transferor's total lifetime holdings in any closely-held business interest which is gratuitously transferred.[56] Adaptation of their proposals would curtail the inappropriate use of secondary adjustments whereby transferors—for transfer tax purposes—artificially make wealth temporarily disappear.[57]

A third method, championed by Professor Ralph Rice, questions the mandate found in the Treasury Regulations that requires "all relevant factors"

> decedent, in making transfers of stock in a closely held [business] which he controls, makes them to transferees who will be a part of the control group of the corporation. In order to establish that a minority discount is appropriate, the proponent of the discount would have to come forward with evidence that the recipient who is claimed to be a minority shareholder actually will suffer the disabilities of an outsider.

Id. at 945. *See also* Thomas D. Hall, Comment, *Valuing Closely Held Stock: Control Premiums and Minority Discounts*, 31 EMORY L.J. 139 (1982):

> As a general rule, the court should presume that no premium or discount is warranted. Premiums and discounts exist only where there is an expectation of successful diversion by a control interest of minority interests' pro rata shares of corporate wealth and earnings, and where such diversion is an inherently illegal act.

Id. at 178–79.

54. Mary Louise Fellows & William H. Painter, *Valuing Close Corporations for Federal Wealth Transfer Taxes: A Statutory Solution to the Disappearing Wealth Syndrome*, 30 STAN. L. REV. 895 (1978). Joseph Dodge advocates the Fellows and Painter approach that at one point was embraced by the Treasury Department. *See infra* note 66. The process Fellows and Painter propose would operate as follows:

> The value of any gift or estate transfer of an interest in a closely held business would be obtained by constituting a fraction, the numerator of which is the percentage interest in the business being currently transferred, and the denominator of which is the aggregate percentage in the business originally owned by the transferor, namely, the sum of (1) the transferred percentage, (2) the retained percentage, and (3) the percentage previously made the subject of the gift; this fraction would be applied against the value (using conventional valuation principles) of the aggregate interest of the transferor.

Joseph M. Dodge, *Redoing the Estate and Gift Taxes Along Easy-to-Value Lines*, 43 TAX L. REV. 241, 255 & n.55 (1988).

55. More specifically, Fellows and Painter suggest that in the estate tax area, section 2031(b) be amended and, in the gift tax area, a new subsection be added to section 2512. Fellows & Painter, *supra* note 53, at 925–26. Both changes incorporate viewing donor's ownership in an aggregate fashion over the donor's lifetime.

56. Fellows and Painters offer many examples of how their statutory recommendations operate in practice. One such example posits the following facts and result:

> *A* owns 70% of the outstanding voting shares of ABC Corporation and his business partner, *B*, owns the other 30% of the shares. In 1980, *A* sells 15% of the total shares to *B* for full and adequate consideration. In 1981, *A* gives a full 10% interest in the corporation to his son, *S*. This gift shall be valued as if part of a 55% controlling block. Upon *A*'s death in 1985, *A*'s remaining 45% interest shall be valued as if part of a 55% controlling block. The donor can enjoy some tax savings with respect to a gift by selling the stock before making the gift rather than after.

Id. at 926 n.102, Ex. 1.

57. One observer draws a useful analogy: The use of fragmenting business ownership to depress the value of a business is compared to a light bulb when it is shut off. "The value does not go anywhere, nor does it show up in the hands of others; it just exists, like the light bulb in a pitch dark room, in a state of invisibility and suspension waiting for someone to come along and take action to cause it to reappear." Wallace, *supra* note 20, at 8–49.

to be taken into account in determining value.[58] Rice claims that this standard is too ambiguous and fosters too much arbitrariness in outcome.[59] As part of his solution, Rice advocates that the "all relevant factors" standard be eliminated. In its place, Rice urges a new benchmark of fair market value be adopted—one based entirely on the value of assets owned by the business enterprise.[60] While he acknowledges that his solution may not be perfect, he states that in the absence of a marketplace, an imperfect system is permissible.[61]

Recognizing that taxpayers, particularly in the family context, can structure gratuitous transfers to maximize discounts, the Service once aggressively advocated proposals such as those set forth above.[62] Due to a court setback,[63] however, the Service relinquished its attack on these secondary valuation adjustments.[64] And while some legislative initiatives to obtain more accurate valuations of certain property interests have succeeded,[65] other

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58. Treas. Regs. §§ 20.2031-1(b) (as amended in 1965), 20.2512-1 (as amended in 1992).

59. Ralph S. Rice, *The Valuation of Close Held Stocks: A Lottery in Federal Taxation*, 98 U. PA. L. REV. 367 (1949).

60. *Id.* at 387.

61. *Id.* at 393–98.

62. *See* Rev. Rul. 81–253, 1981–2 C.B. 187 (revoked by Rev. Rul. 93–12, 1993–1 C.B. 202). In this Ruling, the Service attempted to apply a de facto family attribution rule involving the following set of facts: Donor owned all the shares of a corporation. The corporation's sole asset was a parcel of real estate. The ruling adds the following three relevant facts: (i) there was no restriction on the voting or disposition of the corporate shares; (ii) there were no negotiations under way for the disposition of the corporation's asset or a disposition of shares; and (iii) there was no evidence of family discord or other factors that would indicate that the family would not act as a unit.

On the basis of these facts and citing to a series of four cases which it said supported its position, the Service ruled that family attribution, in the absence of any evidence of discord, must be taken into account in determining the value of any transferred interest. In the words of the Service, "no minority discount will be allowed with respect to transfers of shares of stock among family members where, at the time of the transfer, control (either majority voting control or de facto control) of the corporation exists in the family...." *Id.* The Ruling further added that a number of prior court decisions involving valuation issues were incorrectly decided insofar as these decisions failed to take family attribution into account.

63. Estate of Andrews v. Commissioner, 79 T.C. 938 (1982) (holding that in the absence of legislation, the Service could not use family attribution construct to value closely-held business interest).

64. Rev. Rul. 81–253, *supra* note 62, perceived as a not-so-veiled strategy on the part of the Service to create a family attribution rule where none existed. Estate of Andrews v. Commissioner, 79 T.C. 938 (1982), was ultimately superseded by Rev. Rul. 93–12, 1993–1 C.B. 202.

Rev. Rul. 93–12 involved facts similar to those of Rev. Rul. 81–253. This time, however, the Service stated that family attribution was not to be an element of consideration in the valuation process. This ruling acknowledges that in the circumstances described—where a 100% owner gifts a 20% interest in the company to each of his five children—a minority discount is appropriate.

The war between taxpayers and the Service, however, is not yet over. The Service has recently launched a new attack on valuation adjustments, but from a slightly different vantage point: it now claims that transfers must take into account the fact that certain interests carry with them swing vote potential that enhances their value. Tech. Adv. Mem. 94–36–005 (Sept. 9, 1994) (taxpayer who owned a 100% of a corporation transferred a 5% interest to his spouse and 30% to each of his three children; relying on Estate of Winkler v. Commissioner, 57 T.C.M. (CCH) 373 (1989), the Service held that each of the interests transferred to taxpayer's children possessed swing vote characteristics and therefore ruled that a control premium should apply to them). Whether courts are receptive to the Service's position remains to be seen.

65. Chapter 14 of the Internal Revenue Code, entitled "Special Valuation Rules," was enacted under the Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101–508, § 11602,

legislative effort have stalled, with no apparent attempt to revive them.[66] To the contrary, certain legislators have attempted to facilitate the transfer of business interests by proposing legislation that when distilled down to its basics, represents nothing more than an invitation to deeper discounts.[67] With all the attention and controversy the valuation of closely-held business interests commands, only one thing appears certain: no one is apparently satisfied that the present valuation system works well.

II. GAME THEORY ANALYSIS

Commentators who have studied the valuation of closely-held business interests analogize the process to a lottery or to gambling, where what constitutes value is left to chance.[68] A better and more accurate comparison, however, would be to a game where the players (i.e., the taxpayer and Service) must strategically formulate their moves and consider those of their opponent. As with any game, there are rules and a winner. The issue here is whether the current game structure encourages its players to value accurately the worth of certain business interests gratuitously transferred.

Theorists have recently begun to explore the relationship between game theory and the law.[69] To invoke the term "game" is not intended to belittle the arduous task of determining fair market value involving a gratuitous transfer. Much time, resources and energy are necessary to resolve valuation disputes. What game theory does is unlock our intuition and sheds insight on why, given a particular set of rules (or, in this case, laws), players are likely to behave in a particular fashion. This paper does not delve into the mathematical aspects of game theory involving calculus and probability theory; such an exercise is not necessary. The elementary and nontechnical elements of game theory are sufficient to highlight the inadequacies of the current transfer tax system and direct our attention to a viable alternative.

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104 Stat. 1388, 1388–1491 (1990).

66. Similar to the Fellows and Painter recommendation (*see supra* text accompanying notes 51–52, the Treasury and the Joint Committee on Taxation in 1984 and 1987, respectively, advocated the enactment of special valuation rules to eliminate minority or fractional share discounts for transfer tax purposes. OFFICE OF THE SEC'Y, U.S. DEP'T OF THE TREASURY, TAX REFORM FOR FAIRNESS, SIMPLICITY, AND ECONOMIC GROWTH: THE TREASURY DEPARTMENT REPORT TO THE PRESIDENT, General Explanation of the Treasury Department Proposals, vol. 2, ch. 19.03, at 386–88 (Nov. 1984); JOINT COMMITTEE ON TAXATION, DESCRIPTION OF POSSIBLE OPTIONS TO INCREASE REVENUES (JCS–17–87) (June 25, 1987), *available in* LEXIS, Fedtax Library, TNT File. In 1987, the House of Representatives passed a measure similar to these proposals. H.R. REP. NO. 391, 100th Cong., 1st Sess. 1043 (1987). The measure, however, died in joint committee.

67. *See, e.g.*, Senate Report 1086, captioned "American Family-Owned Business Act", would exempt from estate tax the first $1.5 million dollars of "qualified interests" (e.g., a closely-held family business), and the value in excess of this amount would be taxed at 50 percent of the current estate tax rates. 141 CONG. REC. S10876 (daily ed. July 28, 1995) (statement of Sen. Dole)

68. Rice, *supra* note 59; Bosland, *supra* note 41, at 78.

69. Pioneers in the field include Calabresi (GUIDO CALABRESI, THE COSTS OF ACCIDENTS: A LEGAL AND ECONOMIC ANALYSIS (1970) and Posner (RICHARD POSNER, ECONOMIC ANALYSIS OF LAW (4th ed. 1992). Others have begun to apply game theory to specific legal problems such as bankruptcy (Thomas H. Jackson, *Bankruptcy, Non-Bankruptcy Entitlements, and the Creditors' Bargain*, 91 YALE L.J. 857 (1982)) and the law of contracts (Avery Katz, *The Strategic Structure of Offer and Acceptance: Game Theory and the Law of Contract Formation*, 89 MICH. L. REV. 215 (1990)).

Although an in-depth discussion of the game theory is well beyond the scope of this analysis, the following subsection presents a summary of its salient features. Then, using the game theory, the next subsection highlights the shortcomings of the present valuation process.

A. Introduction to Game Theory

The foundation of game theory rests on the premise that people interact strategically in their dealings with others. This behavior is evident in parlor games, but likewise manifests itself in other social contexts as well (e.g., to earn the employer's goodwill, an employee might always work past five o'clock). Game theory augments an understanding of why it is in the interest of strategic players to follow certain rules (referred to in game theory parlance as "solution concepts") and allows players, based on an analysis of these rules, to assess probable game outcomes.[70]

There are a number of steps involved in applying game theory. The first is to distill the complex interaction of two or more individuals into basic components. In this process, irrelevant variables are disregarded (e.g., individual idiosyncrasies are ignored). Game theory next draws attention to the players and their available strategic options. Each strategy has what are known as "payoffs." Payoffs are the utility a player hopes to derive by adopting a particular strategy.[71] Payoffs are not determined in a vacuum, but rather are measured against the other players' payoffs.

The famous prisoner's dilemma illustrates the inter-relationship between players' payoffs: Two prisoners are held by the district attorney's office. Both are charged in a related robbery and neither prisoner can communicate with the other. Each prisoner is told that if he confesses and becomes a material witness against the other prisoner, he will be freed and the other prisoner will be sentenced to prison for ten years. If neither prisoner confesses, both will be charged with misdemeanors and will be sentenced to prison for two years. Finally, if both prisoners confess, each will be sentenced to prison for six years. In determining whether neither, one or both of the prisoners confess, game theory analysis draws attention to the game's payoffs.[72] The following 2 x 2 bi-matrix[73] illustrates the prisoners' predicament and how they should resolve their dilemma. Unfortunately for the prisoners, game theory predicts that under the dominant solution concept (introduced in this analysis in the text accompanying note 70) that each prisoner's most strategically sound course of action will be to confess and be sentenced to prison for six years.

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70. *See infra* text accompanying notes 76–82.

71. There is no uniform method to express payoffs. A common practice, however, is to express payoffs in terms of dollars.

72. Even though the payoffs below are expressed in terms of years, one can easily correlate prison years to negative utility whereby each prisoner wants to spend the least possible time behind bars.

73. The term bi-matrix is used because each cell has two rather than one number. By convention, the row player's payoffs are to the left of the column player's payoffs.

Exhibit 1

		Prisoner B: No Confession	Prisoner B: Confession
Prisoner A	No Confession	2, 2	10, 0
	Confession	0, 10	6, 6

Prisoner's Dilemma

Thomas Schelling, one of the pioneers of the game theory, introduced the bi-matrix, which facilitates immediate comprehension of the prisoner's dilemma and many other problems.[74] The bi-matrix, a common convention of the game theory, communicates to its readers the names of the game's players, their available strategies, and what they can expect in terms of payoffs. Game theory is predicated on the principle that all players act rationally; that is, a player will always attempt to maximize his or her payoff.[75]

Game theory provides a powerful analytic tool for unlocking how legal rules influence behavior by carefully scrutinizing payoffs that various legal systems impose between two or more players. Take, for example, various tort regimes. As explained in further detail in the discussion which follows, tort laws may discourage or encourage certain behavior on the part of players. An analysis of tort liability introduces certain solution concepts—that is, those precepts that rational players who maximize their utility are likely to employ—that will later be applied in the valuation context.

Before embarking on an actual game theory analysis, one final point. Game theory categorizes strategic behavior based upon whether players make simultaneous or sequential decisions. The first category, known as the "normal form of the game," represents the situation in which the decision-making process is conducted on a simultaneous basis between two players (e.g., scissors, paper and stone). The second category, known as the "extensive form of the game," represents the situation in which the decision-making process is conducted in a sequential fashion (e.g., chess). Depending on the circumstances, any normal form of the game can be transformed into an extensive form of the game and vice versa.

1. *Normal Form of the Game.* A normal form of the game consists of players, strategies, and payoffs.[76] In the tort context, the players and strategies are easy to identify. Consider the situation in which a banana peel is accidentally left in a shopping aisle by a store clerk. The players involve a

74. THOMAS SCHELLING, THE STRATEGY OF CONFLICT (3d ed. 1960).

75. The foundation of game theory does not rest on the principal that people are greedy. While payoffs are often expressed in terms of dollars, they could easily be expressed in a number of other ways (e.g., utility). When possible, however, dollar figures are favored because they can be measured objectively rather than subjectively.

76. DOUGLAS G. BAIRD ET AL., GAME THEORY AND THE LAW 8 (1994). Portions of the discussion involving the application of game theory to various torts regimes is modelled after these three authors' presentation found in their book on pages 6–31.

shopper and the store owner. Both of them can employ a wide range of precautionary measures to shield themselves from incident. For heuristic purposes, their strategies are simplified to "no care" and "due care." Payoffs are difficult to determine with specificity, but because payoffs are primarily intended to communicate the relationship between strategy and expected utility (which, as is the case here, may be expressed in dollar figures), there is no need for pinpoint accuracy.

Assume for purposes of this analysis that the following relationship exists between the amount of money spent, level of care exercised, and probability of an accident happening: the more a player uses or exercises on due care, the smaller the probability of an accident occurring. In the absence of due care on the part of either party, an accident is sure to happen. The shopper will slip on the banana peel, break an arm, and incur $1,000 of medical expenses. To exercise due care costs a party $50 (e.g., the store owner hires another clerk to monitor the store's aisles or the shopper buys a special pair of shoes that are more slip resistant). Finally, even if both parties do exercise due care, there remains a twenty percent chance that an accident still will occur. Payoffs depend on a number of variables (e.g., the severity of the break and the price the doctor charges). What is important is not that the payoff figures are exact, but rather that they communicate the relationship between exercising care and the probability of an accident occurring.

In the absence of attaching liability, game theory predicts that neither player will exercise due care. Game theory arrives at this conclusion through the use of a bi-matrix where players' strategies are compared and then certain solution concepts are applied.

Exhibit 2

		Store Owner	
		No Care	Due Care
Shopper	No Care	-1,000, 0	-1,000, -50
	Due Care	-1,050, 0	-250, -50

No Liability (to Store Owner)

Exhibit 2 illustrates the consequences to the shopper and store owner if (i) neither party exercises due care, (ii) only one party exercises due care, and (iii) both parties exercise due care. This game assumes that the players know both their own and the other player's payoffs and the strategies available to each. What remains unknown to each party is the strategy the other player chooses to employ. Certain solution concepts reveal, however, the strategies the shopper and store owner will likely embrace. The first solution concept in game theory, which is also one of its most powerful, is as follows:

A player will choose a strictly dominant strategy whenever possible and will not choose any strategy that is strictly dominated by another.[77]

Applying this solution concept to Exhibit 2, it is apparent that the store owner has a dominant strategy of "no care" because, whatever the strategy of the shopper is, the store owner receives a payoff of $0 compared to the dominated strategy of "due care" which offers a payoff of -$50.

Although the first solution concept reveals what the store owner will do, it does not reveal the shopper's course of action. The shopper lacks a dominant strategy: on the one hand, if the store owner does not exercise care, to maximize shopper's payoff, the shopper, too, should not exercise due care (and receive a payoff of -$1,000 rather than -$1,050). On the other hand, if the store owner does exercise due care, to maximize shopper's payoff, the shopper should exercise due care (and receive a payoff of -$250 rather than -$1,000). This leads to the introduction of a second solution concept known as iterated dominance:

A player believes that other players will avoid strictly dominated strategies and acts on that assumption.[78]

Application of this solution concept to the facts here permits game theory to predict that the shopper will not exercise due care because when the first solution concept is applied to the shopper, the shopper knows that the store owner will not exercise due care. And because the store owner will not exercise due care, the shopper would rather bear a $1,000 cost by exercising no care instead of bearing a $1,050 cost by exercising due care.

Having invoked two solution concepts and arrived at the conclusion that a tort regime which fails to attach liability to negligent acts potentially promotes people to act recklessly, one must ask the question whether game theory analysis leads to a novel conclusion. Certainly, intuition alone instructs us that in a legal environment where liability does not attach to negligent behavior, we would expect people, on the whole, to act more recklessly. The value of the game theory is that it checks our intuition and allows us to solve more complicated games where we either lack intuition or our intuition is uncertain. Some further examples illustrate this point.

Suppose instead of a tort regime where no liability is present that strict liability prevails. The new tort regime, represented by the bi-matrix in Exhibit 3, illustrates the change of payoffs inuring to each player based on the other player's strategy. This time, however, the shopper has a dominant strategy not to exercise due care because the payoffs are greater to the shopper if the shopper exercises no care than if the shopper were to exercise due care, no matter what strategy the store owner employs ($0 compared with -$50 in both instances). Knowing the shopper's dominant strategy, the store owner will likewise choose not to exercise due care and thereby receive a payoff of -$1,000 rather than -$1,050, applying the solution concept of iterated dominance.[79]

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77. *Id.* at 11.
78. *Id.* at 12.
79. Game theory provides analytic support for this outcome, even though our intuition probably would have led us to the same conclusion. Although it appears that under this legal

Exhibit 3

		Store Owner: No Care	Store Owner: Due Care
Shopper	No Care	0, -1,000	0, -1,050
	Due Care	-50, -1,000	-50, -250

Strict Liability (to Store Owner)

One further example illustrates the predictive power of two of game theory's most prominent solution concepts. Suppose the tort regime is now negligence plus contributory negligence.[80] The payoffs as Exhibit 4 evidences, dramatically shift again and game theory predicts a different outcome from the solutions determined under tort regimes with no liability or strict liability.

Exhibit 4

		Store Owner: No Care	Store Owner: Due Care
Shopper	No Care	-1,000, 0	-1,000, -50
	Due Care	-50, -1,000	-250, -50

Negligence with Contributory Negligence

In this instance, the shopper has a different dominant strategy: to exercise due care. By doing so, the shopper will maximize the payoff no matter what the store owner does. The store owner, taking into account the shopper's dominant strategy, will, under the solution concept of iterated dominance, likewise want to exercise due care to maximize the store owner's payoff (-$50 compared with

regime all shoppers would act without care, this is not entirely true. Some people would not welcome any injury, even if they have to bear the cost. What game theory proves is that under such a legal regime there is enhanced probability that shoppers, knowing the store owner will be liable no matter who is at fault, are more likely to act without due care.

80. This is a legal regime in which the shopper can only recover against the store owner if the shopper is not individually negligent.

-$1,000).[81]

To introduce one more solution concept embodied in the normal form of the game, consider a tort regime with comparative negligence and the following additional assumptions. First, there is a third strategy available to both players in the form of "some care," and, in contrast to the costs of exercising due care ($50), the costs of exercising "some care" is $25. Second, when one party exercises some care and the other party exercise no care, the former party only has to bear one percent of the cost of the accident. Finally, if both parties exercise "no care" or "some care," liability is split evenly. The new game is illustrated by Exhibit 5.

Exhibit 5

Store Owner

Shopper	No Care	Some Care	Due Care
No Care	-500, -500	-990, -35	-1,000, -50
Some Care	-35, -990	-525, -525	-1,025, -50
Due Care	-50, -1,000	-50, -1,025	-250, -50

Comparative Negligence

Application of the prior two solution concepts to this game do not provide a clear solution. That is, neither player has a dominant strategy[82] which, in and of itself, renders the solution concept of iterated dominance inapplicable. Nevertheless, game theory provides two methods by which one may solve this game. The first is to employ the prior two solution concepts in a way that eliminates strategies that neither player would rationally employ. Because payoffs are always higher if a player exercises due care rather than no care, the latter strategy can be eliminated from the analysis. What remains is the familiar 2 x 2 bi-matrix illustrated in Exhibit 6 in which due care is the dominant strategy for both players.

81. Consider legislators who wish their citizenry to act more carefully in certain contexts. The legislators would certainly want to consider utilizing a tort regime such as negligence plus contributory negligence to induce their citizens to act with due care.

82. A player would receive the highest possible payoff in this game if that player exercises some care and the other player exercises no care. If the first player exercises some care, however, the second player can maximize that player's payoff by exercising due care.

Exhibit 6

		Store Owner: Some Care	Store Owner: Due Care
Shopper	Some Care	-525, -525	-1,025, -50
	Due Care	-50, -1,025	-250, -50

Comparative Negligence

There is another approach for solving this game which involves the introduction of a new solution concept known as the Nash equilibrium.[83] It provides:

> *The combination of strategies that players are likely to choose is one in which no player could do better by choosing a different strategy given the strategy the other chooses.*[84]

Stated another way, if at anytime, given an opponent's strategy, a player may choose a more enriching strategy (in terms of payoffs), the player will do so.[85]

Using the comparative negligence model, even if the shopper were attempting to optimize the shopper's payoff by exercising some care in anticipation that the store owner exercises no care, the Nash equilibrium instructs that this is not a realistic solution to this game. This is because the other player will recognize that were the first player to exercise some care, the best counter strategy would be to exercise due care (and receive a payoff of -$50 rather than -$990). The Nash equilibrium of this game is where both the shopper and store owner exercise due care. That is, neither player could further optimize their payoffs given the strategy of due care exercised by the other party. In the end, should due care on the part of parties be a primary goal of a tort regime, game theory advances a convincing argument in favor of a comparative negligence tort regime.

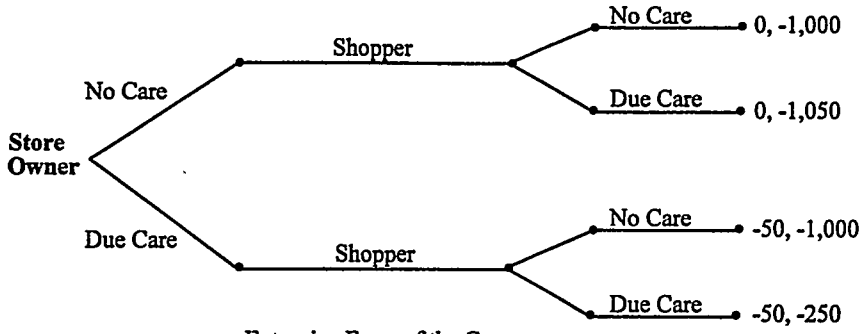
2. *Extensive Form of the Game.* An extensive form of the game, like its sibling, the normal form of game, consists of players, strategies, and payoffs.[86] The fundamental difference between the two forms of the game is that in contrast to the normal form of the game where players make their decisions in a simultaneous fashion, in an extensive form of the game players make their decisions in sequential fashion.

To convey the chronology of the decision-making process, the extensive form of the game relies on what is known as a game tree rather than a bi-

83. John F. Nash, Jr., *The Bargaining Problem*, 18 ECONOMETRICA 155 (1950).
84. BAIRD ET AL., *supra* note 76, at 21.
85. Some games may contain Nash equilibria. In these instances, game theory fails to predict behavior accurately in determining a game's outcome, but, at the very least, it discounts the possibility of certain outcomes.
86. BAIRD ET AL., *supra* note 76, at 51.

matrix. A game tree consists of three elements: (i) branches which represent different courses of action; (ii) decision nodes which represent a choice of actions a player may take; and (iii) terminal nodes which represent a point in the game in which no further decisions may be made by either player and the payoff each can expect to receive. To illustrate, again consider a regime of no liability, represented by Exhibit 7. This time, however, the store owner has the opportunity to make the first move: that is, he may exercise no care or due care prior to the shopper entering the store.

Exhibit 7



Extensive Form of the Game

In this situation, the shopper exercises no care. Reverse induction leads one to conclude that the store owner will always choose to exercise no care because the store owner can maximize the payoff in this fashion. Based on the store owner's first move, the shopper is better off exercising no care to maximize the payoff (and receiving a payoff of -$1,000 rather than -$1,050). The terms of this newest solution concept are expressed as follows:

> *Examine[] [all] actions available to a player at the decision nodes immediately preceding the terminal nodes. [I]dentif[y] the action that brings that player the highest payoff and then write a new extensive form game in which the decision node is replaced with the terminal node associated with that payoff. [R]epeat[] the process until one is left with only a single terminal node.*[87]

This solution concept applies to any extensive form of the game. Like other solution concepts, it does not offer a novel approach to problem-solving. Rather, it sharpens intuition by forcing parties to examine the dynamic relationship between players and their available strategies. Not all strategic problems can be solved through the use of game theory because the complexity of some problems do not lend themselves well to game theory analysis. The valuation of closely-held business interests, however, is an excellent candidate for game theory analysis.

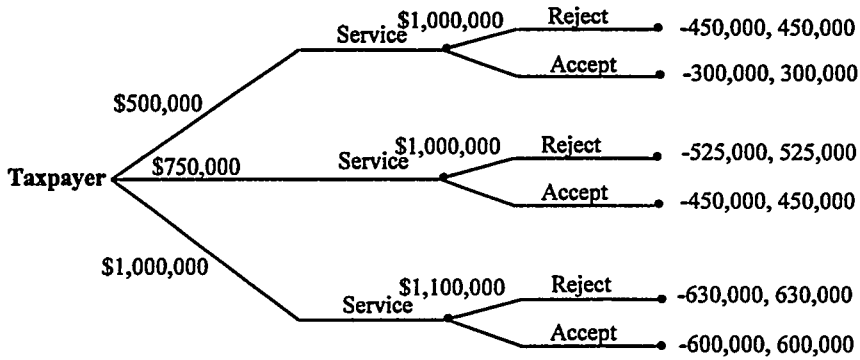
87. *Id.* at 302.

B. Game Theory Applied to the Current Valuation System

Insofar as gratuitous transfers of closely-held business interests are concerned, the extensive form of the game best represents the current valuation system. By submitting a Form 709 (United States Gift and Generation-Skipping Transfer Tax Return) or a Form 706 (United State Estate and Generation-Skipping Transfer Tax Return), the donor of property or the executor of a decedent's estate, as the case may be, commences the valuation review process. The Service scrutinizes the submitted return and then must independently decide whether to accept or to reject the taxpayer's valuation estimate. If the Service rejects the taxpayer's estimate and a settlement cannot be reached, the parties must litigate the matter in court. The process, from start to finish, may ultimately take years to settle, particularly if appeals are involved.

Consider a case in which the estate tax rate is a flat sixty percent, a business is worth $2,500,000, and a decedent owns a 49.99 percent interest in it. Depending on how aggressively minority, marketability, and, if applicable, blockage discounts, are applied, the executor can, for estate tax return purposes, report values of $1,000,000, $750,000, or $500,000.[88] Upon receipt of the return, the Service may either accept or reject the taxpayer's determination. If the Service rejects the taxpayer's value, assume that (i) the Service values the transferred business interest at either $1,000,000 or, alternatively, if the taxpayer values the business interest at $1,000,000, the Service will value the business interest 10 percent higher (i.e., $1,100,000) and (ii) a court always splits the difference between the taxpayer's and Service's determinations. Exhibit 8 presents this extensive form of the game.

Exhibit 8



Extensive Form of the Game

Using reverse induction, the strategy each player will adopt can be predicted. By examining the terminal nodes, the taxpayer recognizes that the Service's dominant strategy is to reject any valuation offered by the taxpayer.[89]

88. Among the many alternatives, the executor could take discounts of 20%, 40%, or 60%, respectively, from $1,250,000 ($2,500,000 x .4999).

89. *See* Bosland, *supra* note 41, at 78 ("[The Service] has frequently been accused of

That being the case, the taxpayer's best strategy to play in response—that is, the one with the highest payoff—is to submit a value of $500,000.[90] Under the microscope of game theory analysis, it is no wonder that so many scholars bitterly refer to the current valuation process as little more than "horse-trading."[91]

Given the assumptions of how the Service tends to respond to taxpayers' valuations, how taxpayers anticipate the Service's response, and how (or the perception of how) courts handle valuation disputes, game theory permits one, through the use of reverse induction, to conclude that the current valuation system spawns litigation. Both parties maximize their payoffs by choosing strategies that produce divergent views of what constitutes fair market value.[92] If the current valuation system falls short of that which is efficacious,[93] legislators should consider an alternative valuation process. The new process should attempt to change players' strategies in a manner that curtails lengthy and expensive litigation and fosters more out-of-court settlements.

III. GAME THEORY ANALYSIS AND FINAL OFFER ARBITRATION

Game theory analysis suggests that at least one alternative to the present valuation determination process is a system of final offer arbitration ("FOA"). FOA differs from what is known as conventional arbitration ("CA"). FOA is where an arbitrator is presented with two sides to a dispute and the arbitrator has the option of favoring one side or the other. CA instead vests the arbitrator with the discretion to arrive at a unique conclusion. Some commentators argue that CA's flexibility invites players to take extreme positions in the anticipation that by doing so, they will skew the midpoint to their favor.[94]

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choosing that factor or combination of factors that will yield the highest valuation and the greatest tax revenue."). If, however, the Service responds too aggressively and its position is not substantially justified, it risks bearing the taxpayer's reasonable litigation expenses. I.R.C. § 7430.

90. *See* Bosland, *supra* note 41, at 78 ("Taxpayers...would ordinarily be expected to emphasize the measures that would indicate low values."). If, however, the taxpayer is too aggressive and submits a value that is too low, the taxpayer may be subject to either a 20 percent or 40 percent penalty depending how substantial the understatement. I.R.C. §§ 6662(g), 6662(h)(2)(C).

91. Bosland, *supra* note 41, at 78 ("[Compromised values] lead[] to the impression among the legal profession, accountants, estate managers, and others that valuation is essentially a process of 'horse-trading' in which each party takes an extreme position in the hope that the final compromise will be to his advantage."); Joseph D. Hartwig, *Valuation Problems Before the Internal Revenue Service and the Tax Court*, N.Y.U. THIRTEENTH ANN. INST. ON FED. TAX'N 1143 (1955). *See, e.g.*, Sirloin Stockade, Inc. v. Commissioner, 40 T.C.M. 928, 934 (1980) ("The overtones of respondent's presentation suggest that he counted on the fact that we would find some middle ground between the values of $5 and $.508 per share of Sirloin's common stock.").

92. Polisher, *supra* note 7, at 184.

93. Declaring his frustration, Judge Tannenwald once commented that "We wish we were as blessed as [counsel] obviously consider themselves to be, although we cannot help but note that it took petitioners' counsel 69 pages and respondent's counsel 60 pages of supplemental briefing to articulate their perceptions. When one considers the time, effort, and expense to petitioners and respondent, to say nothing of the Court, it may not be inappropriate to ask 'was it all really worth it?'" Buffalo Tool & Die Mfg. Co. v. Commissioner, 42 T.C.M. 841, 843 (1981).

94. Charles J. Morris, *The Role of Interest Arbitration in a Collective Bargaining System, in* THE FUTURE OF LABOR ARBITRATION IN AMERICA 197, 236 (Joy Correge et al.

In contrast to CA, FOA narrows an arbitrator's choices to choosing either one side or the other side. FOA permits no compromise position. If one side embraces an unreasonable position, that side risks that its offer will be discredited and the other side's proposal favored.[95] From a theoretical perspective, FOA is supposed to cause disputing parties' offers to converge and thereby enhance the prospects of settlement.[96]

FOA has been successfully employed in labor disputes involving both public sector employees and professional baseball players. Because strikes by public sector employees could potentially endanger citizens (e.g., the loss of police or fire protection), many states preclude local and municipal employees from striking. Nevertheless, to give these employees some leverage in bargaining, many states mandate the use of FOA as the process by which wage and benefit disputes are resolved.[97] Professional baseball, too, now mandates the use of FOA as a procedural means of resolving salary disputes pursuant to a collective bargaining agreement between the major league baseball players' union and the baseball clubs.[98] As one mark of FOA's success, findings indicate that close to ninety percent of those baseball players who filed for FOA negotiated a salary settlement without the use of an outside arbitrator.[99] To date, however, related findings fail to prove that FOA causes a convergence of submissions from those parties who do proceed to arbitrate.[100]

The Service and certain taxpayers have also recently begun to experiment with the use of FOA. This opportunity became available when the Tax Court adopted Rule 124.[101] This rule allows a taxpayer and the Service to use arbitration on a voluntary basis as a means of resolving disputes. Comments to Rule 124 indicate that one of the rule's principal purposes is to facilitate the resolution of valuation disputes.[102] To invoke Rule 124, both parties must file a joint motion at any time after the case is at issue and before trial.[103] Rule 124

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eds., 1976).

95. "[T]he intended effect [of final offer arbitration] is that, in the process of making compromises to enhance the attractiveness of their final offers to the arbitrator, the parties will reach common ground and come so close to a settlement that they will resolve their differences voluntarily." LABOR AND EMPLOYMENT ARBITRATION § 1.02[2] (Tim Bornstein & Ann Gosline eds., 1991); NORMAN E. BRAND, LABOR ARBITRATION—THE STRATEGY OF PERSUASION 239 (1987).

96. William F. Samuelson, *Final-Offer Arbitration Under Incomplete Information*, 37 MGMT. SCI. 1234, 1234 (1991) ("Each side should prefer to make a concession in its demand rather than face the possibility that the arbitrator chooses the other side's offer. Indeed, the pressure for concessions may be sufficient to produce more frequent negotiated agreements in the first place. Even if it not invoked, the threat of FOA has the beneficial effect of spurring bargained agreements.").

97. To date, the following nine states have adopted some form of FOA: Connecticut, Hawaii, Illinois, Iowa, Michigan, Nevada, New Jersey, Ohio and Wisconsin.

98. Frederick N. Donegan, *Examining the Role of Arbitration in Professional Baseball*, 1 SPORTS L.J. 183, 190–93 (1994).

99. John L. Fizel, *Play Ball! Baseball Arbitration After 20 Years*, 49 DISP. RESOL. J. 42, 44 (June 1994).

100. *Id.* at 44–45.

101. Adopted on January 12, 1990. All of the Tax Rules, including commentary thereon, can be found in Volume 93 of the Tax Court Reports.

102. "Resort to voluntary binding arbitration is particularly appropriate in valuation cases. The Court has repeatedly stated that such cases should be resolved by the parties by way of settlement or other procedures short of trial or otherwise submitting matters for Court opinions." *Id.*

103. The motion filed under Rule 124 must have attached to it a joint stipulation, executed

does not require that the parties agree to FOA. Parties may, however, at their discretion, stipulate to such a requirement.

In at least one well-publicized case, the taxpayer, Apple Computer, and the Service agreed to use FOA under the auspices of Rule 124. The disputed issue involved a transfer pricing matter under Section 482 (i.e., whether Apple was shifting income outside the country by overpaying for parts manufactured at its Singapore subsidiary). The stakes were high: the Service had proposed a $114 million deficiency. For a number of reasons, the parties agreed that it was in their interests to use FOA rather than CA.[104] Because the use of FOA was an uncharted path, however, both parties struggled to design mutually acceptable ground rules that would produce accuracy in results.[105] When the matter was finally resolved before the arbitration panel, both parties proclaimed the virtues of FOA for the following reasons: (i) the parties narrowed their differences prior to their submissions to the arbitrators; (ii) the interval between the arbitration proceedings and the decision was shortened; and (iii) the process was much less expensive than it otherwise would have been if the case had gone to trial.[106]

The Apple Computer case, coupled with labor dispute resolution procedures involving public sector employees and professional baseball players, provide anecdotal evidence supporting the use of FOA. Game theory goes one further step by providing analytic support for the proposition that FOA promotes an enhanced environment for settlement as it transforms the extensive

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by each party or counsel of record, and containing the following: (1) a statement of the issues to be resolved by the arbitrator; (2) an agreement by the parties to be bound by the finding of the arbitrator on the issues to be resolved; (3) the identity of the arbitrator or the procedure to be used to select the arbitrator; (4) the manner of allocating all of the costs among the parties; (5) a prohibition against ex parte communications with the arbitrator; and (6) such other matters as the parties may deem appropriate. F. Brook Voght, *Amended Tax Court Rules Reflect New Jurisdiction and Goal of Increased Efficiency*, 73 J. TAX'N 404, 405 (1990). Concerns the Service have raised include: (1) ensuring the use of the arbitration procedure does not undermine the effectiveness of the IRS Appeals Division; (2) the filing forms to be used; (3) the documents in the arbitration process that should be part of the Tax Court public record; (4) the proceeding the arbitrator should be entitled to conduct; (5) how the arbitrator is to receive evidence; (6) other items to be included in the Tax Court's order appointing the arbitrator; (7) the time limitation to be placed on the arbitration procedure; (8) the form and content of the arbitrator's findings; (9) whether, when, and to what extent the Tax Court may intercede to vacate or modify the arbitrator's factual conclusions; and (10) the effect on the arbitrator's findings of the appeal of a legal issue in the Tax Court decision. *Id.* at 405–06.

Concerns practitioners have raised include: (1) would the evidence with respect to the factual determination be likely to have a favorable influence on the judge deciding the legal issue?; (2) can an acceptable arbitrator be found for the particular case?; (3) which procedure would be quickest?; (4) which procedure would be the least expensive?; and (5) what is the likelihood of an appeal of the Tax Court's decision on the legal issues? *Id.* at 406.

104. Both parties were receptive to FOA because both wanted to have technical experts judge the merit of their proposals and did not want the litigation process to extend for what could have been a ten year period. Furthermore, the Service was anxious to apply Rule 124 to see if it was a viable option in a transfer pricing dispute. *IRS and Apple Submit Transfer Pricing Case to 'Baseball' Arbitration by Industry Experts*, 10 ALTERNATIVES TO HIGH COST LITIG. 47 (April 1992).

105. It was reported that Apple and the IRS spent nine months negotiating a stipulation and developing a procedure to meet their mutual needs. *Id.*

106. *After Successful Use of Baseball Arbitration, Apple, IRS Both Declare Themselves Winners*, 11 ALT. HIGH COST LITIG. 163 (December 1993). The parties did acknowledge, however, a number of flaws in the process: (i) the selection of arbitrators took too long and was too costly and (ii) the method of discovery and document production needed improvement. *Id.*

form of the game embodied in the current valuation process into a normal form of the game. And, given certain rules (i.e., statutes), legislators can establish a normal form of the game framework that if instituted, would enable one to predict that both the taxpayer and Service should adopt reasonable positions.

For example, reconsider Exhibit 8 and the extensive form of the game in which the Service was allowed to submit its valuation proposal after the taxpayer's valuation was submitted. Using this framework as a basis, consider a procedure where once the Service decides to challenge a taxpayer's valuation, the Service and taxpayer have to submit their valuation proposals to a third party arbitrator. The arbitrator then would have to choose between the two valuation proposals.[107] Certain predetermined criteria, such as those set forth in Revenue Ruling 59-60,[108] would facilitate the arbitrator's task, enabling him to evaluate the reasonableness of each proposal.[109] To complete the picture, a few additional rules are in order:

(i) anytime the taxpayer submits a valuation proposal (denoted as "TVP") in excess of the Service's valuation proposal (denoted as "SVP"), TVP should control;[110]

(ii) if TVP is twenty-five percent lower than the arbitrator's own fair settlement estimation (denoted as "V*"), the taxpayer bears a twenty percent penalty on the tax deficiency.[111] Alternatively, if SVP is twenty-five percent higher than V* the tax due will be reduced by twenty percent of the tax that would have otherwise been due on the overstated portion of the proposal.[112] Rule (ii) applies if and only if the other party submits a valuation proposal that is within ten percent of V*; and

(iii) if both TVP and SVP are in variance with V* (say, by a margin greater than ten percent), half the time the taxpayer will prevail and the other half of time the Service will prevail.[113]

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107. In the case involving Apple Computer, the parties' stipulation provided that the amount submitted to the arbitrators would not exceed Apple's original figure or be less than the Service's original estimate. *Id.*

108. *See supra* note 12.

109. In baseball arbitration, for example, an arbitrator is allowed to consider only the following select criteria: player's contribution during the past season; length and consistency of career contributions; past compensation; comparative baseball salaries; existence of physical or mental defects; and performance of the club. Donegan, *supra* note 98.

110. A taxpayer ordinarily has the initial burden of proof in a civil tax trial (FED. TAX CT. R. 142) because of the taxpayer's superior access to information. The fact that a taxpayer chooses a higher value then the Service (and thereby incurs a higher transfer tax) suggests that the taxpayer likely had access to certain information that only the taxpayer was privy to.

111. *See* I.R.C. § 6662 (application of accuracy-related penalties).

112. *See* I.R.C. § 7430 (awards costs and certain fees when the position of the Service is not "substantially justified").

113. In practice, the proposal that is closest to V* wins. In mathematical terms, the arbitrator selects TVP if TVP - V* < V* -SVP and the arbitrator selects the SVP if TVP - V* > V* - SVP. Numerous studies indicate that the more risk adverse party moves away from its most preferred position towards a position which is more likely to win while the less risk adverse person chooses to make the good state of the world better albeit less likely. Donald Wittman, *Final-Offer Arbitration*, 32 MGMT. SCI. 1551 (1986); Henry S. Farber, *An Analysis of Final-Offer Arbitration*, 24 J. CONFLICT RESOL. 683 (1980). There are no studies which indicate the risk aversion of taxpayers or the Service. For purposes of analysis, therefore, assume that (i) both the taxpayer and Service are risk neutral and (ii) neither party has the burden of proof. Under these assumptions, TVP and SVP are likely to prevail an equal number of times if both are equidistant from V*.

The facts that produced the extensive form of the game captured in Exhibit 8, coupled with the additional rules cited immediately above (and assuming V* is equal to $750,000), produce a normal form of the game captured in Exhibit 9.

Exhibit 9

		IRS		
		Low	Medium	High
Taxpayer	Low	-300,000, 300,000	-480,000, 480,000	-450,000, 450,000
	Medium	-450,000, 450,000	-450,000, 450,000	-420,000, 420,000
	High	-600,000, 600,000	-600,000, 600,000	-600,000, 600,000

FOA

Applying the solution concept of iterated dominance, it is evident that a taxpayer would not submit a high TVP and, similarly, the Service would not submit a low SVP. In each instance, these are dominated strategies. Analysis of this game, therefore, leads to the conclusion that these two strategies should be eliminated. A simplified version of the game can now be captured as depicted in Exhibit 10.

Exhibit 10

		IRS	
		Medium	High
Taxpayer	Low	-480,000, 480,000	-450,000, 450,000
	Medium	-450,000, 450,000	-420,000, 420,000

FOA

Each party now has a clearly marked dominant strategy: to submit a moderate valuation proposal. Adherence to this strategy will put each player in a better position than the player would have been had it chosen an alternative strategy, signifying that a Nash equilibrium has been struck.

Even if game theory analysis offers strong analytic support for the adaptation of FOA, two items of practical importance still need to be addressed. First, the law provides litigants with the right to appeal.[114] How should this right bear on FOA? In line with game theory analysis, the factual findings of the lower court should be *final*, lest the taxpayer or Service attempt at the appeals level to achieve a compromise result. A clearly erroneous standard

114. FED. R. APP. PROC. 4.

should therefore be maintained, similar to that which is already in place for factual findings of the Tax Court.[115]

A second issue of practical importance is the need for a legislative initiative to advance the use of FOA. At the present time, the law does not permit a court to choose one side or the other as a means of settling disputes between parties.[116] The Code currently mandates an absolute standard: fair market value.[117] For filing purposes, this standard suffices as an adequate benchmark for taxpayers. Once the Service challenges the taxpayer's proposal, however, game theory instructs that a court abandon its elusive search for fair market value. In its place, Congress should introduce statutes promoting the use of FOA, similar to those already employed by various state legislatures to resolve labor disputes involving their public sector employees. Although FOA may not necessarily produce the coveted fair market value result, it should nevertheless achieve judicial efficiency by encouraging settlement and moderate submissions.[118]

IV. CONCLUSION

Recall how King Solomon handled the famous controversy between two disputing women.[119] It would seem evident to anyone, particularly to a learned King, that favoring one party's position was preferable to splitting the parties' differences. To uncover the truth, however, an illuminating process was needed, one that would evoke elucidating responses from the disputants. The

115. FED. R. CIV. PROC. 52(a); Whipple v. Commissioner, 373 U.S. 193 (1963). *Compare* Miami Valley Broadcasting Corp. v. Commissioner, 594 F.2d 556, 557 (6th Cir. 1979) ("While [the erroneous] standard of review requires that we accord great deference to the values established by the Tax Court..., it does not render us a mere rubber stamp."). In the context of FOA, this standard does not obviate the need for a written opinion; instead the requirement of a written opinion would facilitate the review process.

116. *See* Kaplin v. Commissioner, 748 F.2d 1109, 1112 (6th Cir. 1984) (holding that a court cannot sanction a taxpayer for seeking a judicial determination by picking one side or the other because such a determination would contradict the fair market value standard established in the Code).

117. I.R.C. §§ 2031, 2511.

118. Introduction of FOA, however, does not represent a second-best solution. The theory of second-best posits that "if the tax system makes one important departure from a theoretically perfect set of rules, the second-best set of rules may be a set that includes another, offsetting departure from the perfect rule set." Richard Schmalbeck, *The Uneasy Case for a Lower Capital Gains Tax: Why Not the Second Best*, 48 TAX NOTES 195, 199 (1990), citing to Richard G. Lipsey & Kelvin J. Lancaster, *The General Theory of Second Best*, 24 REV. ECON. STUD. 11 (1956). When it comes to the issue of valuation, the Code relies on an ideal rather than a departure therefrom—namely, that the taxpayer be taxed on the fair market value of property gratuitously transferred. Because the current adjudication procedure fails to discern this value in a credible fashion, FOA represents a solution which may be optimal, given the virtual impossibility of achieving the ideal.

119. Then the king said, "The one says, 'This is my son that is alive, and your son is dead'; and the other says, 'No; but your son is dead, and my son is the living one.'" And the king said, "Bring me a sword." So a sword was brought before the king. And the king said, "Divide the living child in two, and give half to the one, and half to the other." Then the woman whose son was alive said to the king, because her heart yearned for her son, "Oh, my lord, give her the living child, and by no means slay it." But the other said, "It shall be neither mine nor yours; divide it." Then the king answered and said, "Give the living child to the first woman, and by no means slay it; she is its mother." And all Israel heard of the judgment which the king had rendered; and they stood in awe of the king, because they perceived that the wisdom of God was in him, to render justice. 1 *Kings* 3:23–28.

clever King devised such a process: To settle the parties' differences, he proposed a dramatic resolution to the issue. And the process worked. Today, King Solomon is probably remembered more for the wisdom of his approach than for the result itself.

FOA functions in the same fashion. The process of FOA has a dramatic flair insofar as there is only one winner. Given a certain set of rules, game theory analysis instructs that this "winner-take-all" approach should elicit a tone of moderation from the players. Moderation enhances the prospects of settlement and, depending on the players' risk tolerance, fosters a convergence of views. Yet, even if the process fails to achieve these goals, few would argue that a "baby" is probably better off "whole"—having its fate determined in an expedited and reasonably inexpensive fashion—than being "split"—as the warring parties spend exhaustive resources, bantering back and forth over a long number of years.

In sum, game theory provides strong analytic support for the use of FOA in the valuation process. Congress should therefore mandate the use of FOA to resolve valuation disputes arising under the transfer tax chapters of the Code. If the use of FOA proves successful in that context, Congress should consider making FOA the Code's universal means of resolving all valuation disputes.