The Problem of Line-Drawing

Sarah B. Lawsky[*]

> It cannot be that if two is few, three is not so likewise, nor that if two or three are few, four is not so; and so on up to ten. But two is few, therefore so also is ten.
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> —Diogenes Laertius[1]

I. INTRODUCTION

In *Quantitative Model for Measuring Line-Drawing Inequity*,[2] Bradley Borden tackles the extremely difficult problem of line-drawing: when two people or situations are similar, how can we justify treating them differently? Borden's Article focuses on the inequity that he claims arises from subjecting some gains from real-estate sales to the higher ordinary income-tax rate while taxing other real-estate gains as capital gains, subject to a lower rate. Borden presents a model that he suggests can be applied in many areas. Borden's model—I will call it the "Inequity Model"—is not meant to predict outcomes or provide a causal explanation. Rather, this is the sort of model that, as I have described elsewhere,[3] will be helpful to the extent it focuses or develops our intuitions or highlights previously overlooked questions or assumptions.

In this brief response, I first describe the kind of fairness that the Inequity Model presents (not necessarily, as it turns out, line-drawing fairness), and then I explain why the Inequity Model as implemented in Borden's Article does relate to line-drawing fairness. I raise some concerns about the Inequity Model as presented, and I highlight one of its larger problems by attempting to apply it to another area of law—speed limits. I conclude that while Borden's Article takes a quantitative and possibly helpful approach to an important question, the Inequity Model falls short of the Article's stated goals.

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* Professor of Law, University of California, Irvine, School of Law. Thanks to Pegah Ghaneian for truly excellent discussions and assistance.

1. 2 DIOGENES LAERTIUS, LIVES OF EMINENT PHILOSOPHERS, bk. VII, para. 83, at 191 (G.P. Goold ed., R.D. Hicks trans., 8th prtg. 1979).

2. Bradley T. Borden, *Quantitative Model for Measuring Line-Drawing Inequity*, 98 IOWA L. REV. 971 (2013).

3. *See* Sarah B. Lawsky, *How Tax Models Work*, 53 B.C. L. REV. 1657 (2012).

II. DEFINING FAIRNESS

The Inequity Model compares various taxpayers' actual and normative tax liabilities.[4] The Inequity Model takes a situation to be unfair to the extent that one person is treated more differently from his normative treatment than another person is treated differently from hers.[5] "More differently" is defined in terms of difference, not ratio, and in terms of tax liability, not tax rate.[6] The distance between various taxpayers' situations matters only if that distance affects actual or normative tax liability. This makes sense, because if two taxpayers' normative tax liabilities are very different, the taxpayers are not relevantly similar, even if the taxpayers appear close together on whatever is chosen as the model's x-axis.

This is clear from the alternate definition of what Borden calls "single-reference-point inequity," which "measures the extent to which the law treats two situations differently, disproportionately to their differences."[7] As the Article explains,[8] for any two scenarios *A* and *B*, single-reference-point inequity simplifies to

$$\left|1 - \frac{(Actual\ Tax\ Liability\ for\ A - Actual\ Tax\ Liability\ for\ B)}{(Normative\ Tax\ Liability\ for\ A - Normative\ Tax\ Liability\ for\ B)}\right|$$

For example, imagine there are only two people in the world, Andrew and Bella. Andrew's normative tax liability is $800, but he is taxed $1000, and Bella's normative tax liability is $100, but she is taxed $300. Under the Inequity Model, Andrew and Bella's situation is perfectly fair, because the difference between their actual tax liabilities is $700, and the difference between their normative tax liabilities is $700:

$$\left|1 - \frac{(Actual\ Tax\ Liability\ for\ A - Actual\ Tax\ Liability\ for\ B)}{(Normative\ Tax\ Liability\ for\ A - Normative\ Tax\ Liability\ for\ B)}\right| =$$

$$\left|1 - \frac{1000 - 300}{800 - 100}\right| = |1 - 1| = 0$$

4. Borden, *supra* note 2, at 995. This is true notwithstanding the initially proposed "triangle method," as Borden acknowledges. *See id.* at 998. The "triangle method" devolves into what we might call the "difference in lines method" because the two triangles Borden proposes comparing have the same base, and the area of a triangle equals ½ x base x height. So, if Triangle A and Triangle B have the same base, when you subtract the area of Triangle A from the area of Triangle B, and then divide by the area of Triangle B, the ½ coefficient and the base cancel out, leaving only a ratio of the heights. *See id.* at 998–1000 & nn.89–92.

5. *See id.* at 995.

6. *See id.* at 997–99.

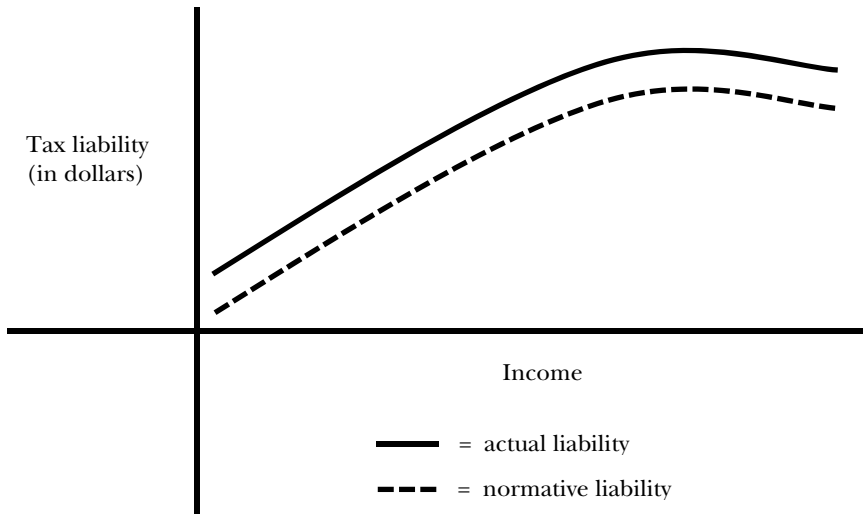
7. *Id.* at 1000.

8. *See id.* at 100 n.92.

This scenario is perfectly fair even though Bella's $200 excess tax is twice as much as her $100 normative tax, and Andrew's $200 excess tax is only one-fourth as much as his $800 normative tax. The Inequity Model thus models a very particular type of fairness. It is not distributive fairness, and it is not procedural fairness. We might call it "dollar-distance fairness": If everyone loses (or wins) to the same dollar extent, then things are fair.

Graphically, for any arbitrary picture of normative tax liability, there is perfect dollar-distance fairness if actual tax liability remains a constant distance from the normative tax liability. For example, if the dotted line in this graph is normative tax liability, and the solid line is actual tax liability, all taxpayers pay more tax than they should, but everyone is the same distance from normative liability, so this is perfect dollar-distance fairness:[9]

FIGURE 1

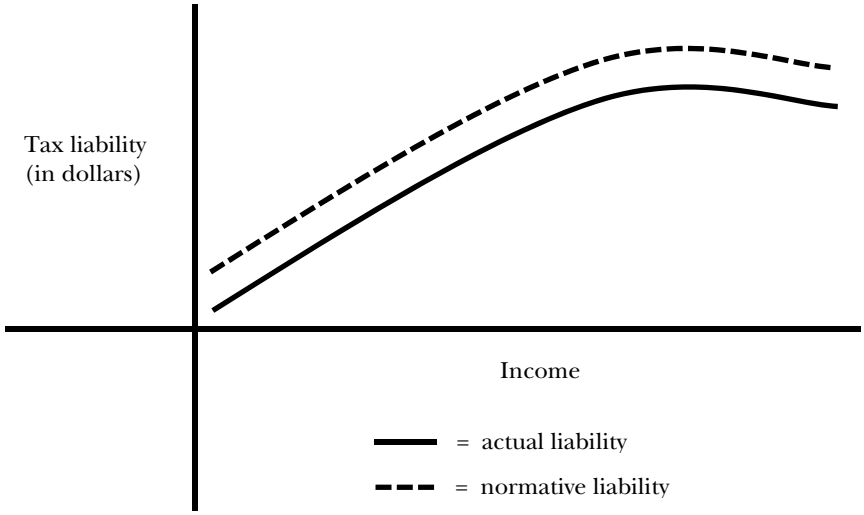


If the dotted line is normative tax liability, and the solid line actual tax liability, all taxpayers pay less tax than they should, but again, everyone is the same distance from normative liability, so this is also perfectly dollar-distance fair[10]:

9. These lines look continuous, but they're not—they should be viewed as many small dots, indicating that there are a finite number of possible situations for the taxpayer.

10. *See* Borden, *supra* note 2, at 999–1000.

FIGURE 2



Dollar-distance fairness is not equivalent to saying that if two people are close to "the line," they should be treated the same, or almost the same, and the Inequity Model does not depend on how close various taxpayers are on any axis. It depends only on normative and actual tax liability. In fact, we can apply dollar-distance fairness without any sort of axis or line-drawing. If we have a list of all taxpayers, and each taxpayer's normative tax liability, we can figure out which taxpayers are further from their normative treatment than others.

III. DOLLAR-DISTANCE FAIRNESS AND LINE-DRAWING

Nonetheless, inequity in the Inequity Model as applied in Borden's Article does vary with the distance between any two scenarios, because Borden's assumptions force the Inequity Model to tell us about line-drawing. In Borden's application of the Inequity Model, treating two people who are close together on the axis very differently does result in dollar-distance unfairness, but not merely because the two taxpayers are close together on the axis. Rather, Borden includes additional assumptions that are necessary to make the Inequity Model about line-drawing.

Specifically, in Borden's particular implementation of the Inequity Model, both the actual tax liability and the normative tax liability depend on the number of parcels of land sold, and the x-axis represents the number of parcels of land sold. This is not some strange coincidence; presumably, it's why Borden selected "Number of Sales" for the x-axis.[11]

11. *See id.* at 995–1009 figs.4–11, 13–14.

Because the Inequity Model depends entirely on the definitions of actual tax liability and normative tax liability, understanding how those terms are defined is key to understanding the results Borden presents. Tax liability, in turn, depends on both the amount of gain from the sale and the tax rate, so to understand Borden's definition of actual and normative tax liability, we must first understand how Borden defines gain from sale, and then understand how he sets each of the actual and normative tax rates.

A. GAIN FROM SALE

Borden assumes that the amount of gain from the sale is a linear function of the number of parcels sold, and that each square foot has the same basis ($1.50).[12] Let N represent the number of parcels in a given sale. Then

$$\text{Gain per Square Foot from Sale} =$$
$$2.00 + 0.01N - 1.50 =$$
$$0.5 + 0.01N$$

Gain from sale is relevant both to actual tax liability and to normative tax liability. Because inequity is determined based on tax liability, in addition to tax rate, the amount of inequity will depend in large part on how gain is defined. Gain could be constant, or it could be (as it is here) a function of the number of parcels sold. If it is a function of parcels sold, that function could be, but need not be, linear (as it is here).

B. ACTUAL TAX LIABILITY

Actual tax liability depends on both the gain from sale and the applicable tax rate. We have seen that Borden defines the gain per square foot as

$$0.5 + 0.01N$$

for property divided into N parcels.[13] The tax rate is either 15% (for sales treated as generating capital gain) or 35% (for sales treated as generating ordinary income). To implement the model, one must decide where to switch from taxing at 15% to taxing at 35%. This should not be a normative decision, but rather a descriptive one, because the model is trying to capture actual tax liability. Borden assumes that if property is divided into more than 100 parcels, the 35% rate applies, and if it is divided into 100 or fewer parcels, the 15% rate applies.[14]

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12. *Id.* at 976–77 & n.14.
13. *See id.* at 1030.
14. *Id.* at 985.

The actual tax liability thus increases linearly with the number of parcels sold. For sales treated as generating capital gain and subject to a 15% tax rate, it equals

$$(0.15)\,(0.5 + 0.01N)$$

And, for sales treated as generating ordinary income and subject to a 35% tax rate, it equals

$$(0.35)\,(0.5 + 0.01N)$$

C. *NORMATIVE TAX LIABILITY*

The normative tax liability equals the gain, as defined above, multiplied by the normative tax rate. Borden assumes that the normative tax rate accurately identifies the portion of gain due to services and the portion due to appreciation in property, and that this varies linearly with the number of parcels sold.[15] In Borden's version of the model,[16] the normative tax rate equals

$$0.15 + 0.001N$$

The normative rate is thus a linear function of the number of parcels sold. The normative rate might also be a flat rate, or a nonlinear function of number of parcels sold, or vary in some other way across parcels sold (a flat rate for certain parcels and a nonlinear function for other parcels, and so forth).

In the Article, the normative tax liability increases quadratically with the number of parcels sold, because the normative tax liability equals the normative rate times the gain, and by assumption, each depends on the number of parcels sold. Normative tax liability equals

$$(0.15 + 0.001N)\,(0.5 + 0.01N)$$

Thus, both the actual tax liability and the normative tax liability depend on the number of parcels sold and only the number of parcels sold.

IV. CONCERNS ABOUT THE INEQUITY MODEL

The assumptions that underlie the Inequity Model as applied in Borden's Article suggest four areas of concern: (1) the Article's implicit definition of fairness; (2) the Article's definition of normative tax liability; (3) the contingency of the Article's conclusions; and (4) the application of the Inequity Model to other areas of the law.

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15. *Id.* at 996–97 & n.86, fig.4.
16. *See id.* at 996 & n.85.

A. FAIRNESS

While Borden intends to provide insight about fairness, there are at least two problems with the way the Inequity Model defines that concept.

First, the Inequity Model measures an ideal of fairness that may not be intuitive and does not appear to have a strong theoretical basis: that of dollar-difference fairness. It is not obvious why we should be concerned about dollar-distance fairness. A $100 difference between actual tax liability and normative tax liability seems far more significant if the gap is between $5 and $105 than if it is between $1,000,000 and $1,000,100.[17] A more intuitive approach might be to measure the ratio of actual to normative tax liability for each taxpayer (or scenario), and then compare these ratios. If a model is meant to help our intuitions about inequity, its definition of inequity should be grounded somehow—perhaps by intuition, perhaps by argument.

Second, and even more broadly, it is not clear why we should be concerned about unfairness related to tax liability for gains. Tax liability is based not only on tax rate, which is in the government's control, but also on the amount of gain, which is not. The amount of gain is a function of the market, not only at the time the taxpayer disposes of the property, but also (usually) at the time the taxpayer acquired the property. For example, if Andrew acquired his property for $1.00 per square foot, Bella acquired her property for $2.00 per square foot, and they sell their respective properties for $2.50 per square foot, Andrew will have more gain ($2.50 – $1.00 = $1.50 per square foot) than Bella ($2.50 – $2.00 = $0.50 per square foot). Thus, if they are taxed at the same rate, Andrew will have more tax liability per square foot than Bella. Similarly, imagine that Bella divides her property into 76 equally sized parcels, Andrew into 75, and the market values 1/76 of a plot disproportionately to 1/75 of a plot. Bella will have disproportionately more tax liability even if her tax rate is the normative rate, and the Inequity Model will tell us that the tax treatment is very inequitable. Concerns about equalizing tax liability per square foot seem more appropriate for a tax on property, not our actual system of a tax on income.

B. DEFINING THE NORMATIVE

Borden assumes that the normative tax rate for a given sale of property is a function of the number of parcels sold and progresses linearly as the number of parcels sold increases.[18] But he does not explain why this is the normative tax rate. He does not mean that this is the best treatment of property sales; he acknowledges that a single rate for all sales, with no

17. *See generally* Sarah B. Lawsky, *On the Edge: Declining Marginal Utility and Tax Policy*, 95 MINN. L. REV. 904 (2011).

18. Borden, *supra* note 2, at 996–97 & n.86, fig.4.

division between ordinary and capital gains, might be better.[19] He does not explain why he chooses to operate in the world of second-best, given that he can posit any normative world he wants.

To show how much work the assumption of normative tax rate does, consider Borden's statement that "inequity would almost completely leave the system if the law bifurcated income,"[20] such that each piece of property were taxed at a blend of the ordinary rate (for the portion of income attributable to services) and the capital-gains rate (for the portion of income attributable to appreciation in property). This should not be a surprising result at all: he has defined the normative tax rate as starting at 15% and increasing incrementally for each additional parcel of property sold, so as to capture the increased amount of gain due to services.[21] In other words, Borden first defines the normative tax rate as a bifurcated rate and defines fairness as a proportionally small distance from the normative rate. Then he recommends a bifurcated rate because a bifurcated rate would eliminate inequity. But because the normative rate has already been defined as a bifurcated rate, and because the amount of inequity depends on the distance from a bifurcated rate, of course a bifurcated rate would eliminate inequity—tautologically so. Defining the normative in tax is of course tremendously difficult,[22] and thus, it is risky to create a model that depends so profoundly on how the normative tax is defined.

C. CONTINGENT CONCLUSIONS

Borden's conclusions are unusually contingent on his assumptions because of how he defines normative tax liability and gain from sale. Because these definitions are so similar, the Inequity Model, as implemented based on Borden's assumptions, can be significantly simplified. Recall that the normative tax rate equals $0.15 + 0.001N$,[23] and the amount of gain equals $0.5 + 0.01N$.[24] Based on these assumptions, if one taxpayer with X parcels is subject to the actual rate of 35%, and another taxpayer with N parcels is subject to the actual rate of 15%, the single-reference-point inequity equals[25]

19. *Id.* at 981 & n.30.

20. *Id.* at 1032.

21. *Id.* at 996 & n.85.

22. *Cf.* Boris I. Bittker, *Accounting for Federal "Tax Subsidies" in the National Budget*, 22 NAT'L TAX J. 244, 260 (1969) (proposing that "one could lock forty tax experts in a room for forty days, and get no agreement—except as a surrender to hunger or boredom—"about the desirable structure of the tax code).

23. *See supra* text accompanying note 16.

24. *See supra* text accompanying note 13.

25. You can see the walk-through of the simplification in Appendix A.

$$\left|1 - \frac{Actual\ Tax\ Liability\ for\ X\ - Actual\ Tax\ Liability\ for\ N}{Normative\ Tax\ Liability\ for\ X - Normative\ Tax\ Liability\ for\ N}\right| =$$

$$\left|1 - \frac{1000 + 35X - 15N}{(0.1)(X - N)(200 + X + N)}\right|$$

This particular formula is an artifact almost entirely of how Borden has chosen to set both the gain from a sale and the normative tax rate. The oversimplification becomes starker when both sales are subject to the same tax rate. For example, if both parcels are subject to a 15% rate, the single reference point inequity simplifies[26] to

$$\left|1 - \frac{Actual\ Tax\ Liability\ for\ X\ - Actual\ Tax\ Liability\ for\ N}{Normative\ Tax\ Liability\ for\ X - Normative\ Tax\ Liability\ for\ N}\right| =$$

$$\left|1 - \frac{150}{200 + X + N}\right|$$

These simplifications, and thus the Article's graphs and some of its generalizations, depend not only on how Borden defines fairness, but also on the particular definitions that Borden has chosen for gain and normative tax rate.

D. GENERALIZING THE MODEL

Borden suggests that "[a]fter witnessing the application of the model to one scenario, other analysts should recognize how the model could apply to other scenarios."[27] To get a sense of the choices needed to apply the Inequity Model in another area, let's try to apply it to, as Borden suggests, speed limits.[28]

First, pick something that can be placed on an axis and is relevant to driving safely. The obvious choice here is miles per hour.

Second, determine the actual penalty for driving over a particular number of miles per hour. This is easier than in the tax scenario, because states actually have speed limits based entirely on how fast someone is driving.[29] Say that the speed limit is 65 miles per hour, and the actual penalty is $100 for speeds over 65 miles per hour and $300 for speeds over 80 miles per hour.

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26. Again, you can see the walk-through of the simplification in Appendix B.

27. Borden, *supra* note 2, at 976 n.11.

28. *Id.* at 973–75.

29. As Borden acknowledges, the actual determination of whether sales of land are taxed as capital gains or ordinary income is based on more than just the number of parcels sold. *Id.* at 979–80 & n.20.

Now figure out the normative fine for each mile per hour. This is tricky. First, it is not clear what "normative fine" means—perhaps it is the fine that deters perfectly? or efficiently? or that punishes certain kinds of speeders? Regardless, presumably the normative punishment (whatever that means) is zero at some speed, and at some other point it is not zero. We don't know where the normative punishment switches from zero to not zero, because if we did, that is where we would draw the line. But of course, this is a model, a simplification of the real world. So, using Borden's methodology, pick a speed where the normative treatment switches to a penalty, and then increase the normative penalty after that as a function of how many miles per hour the person drives. All our results depend on how we define that normative penalty. If the normative penalty increases linearly, we will get one set of results demonstrating unfairness; if it increases exponentially, we will get another result.

But now things are very confusing. If the normative penalty is in fact zero at one speed (say, 30 miles an hour), and is not zero at another speed (say, 150 miles an hour), then, somewhere between 30 miles an hour and 150 miles an hour, we will have to implement a penalty. At this point, there will be two speeds close together that are treated very differently—and this is exactly what we would hope. Defining the normative penalty as a continuous function of miles per hour gives little insight into the actual problem, as it seems unlikely that the normative penalty involves every driver, regardless of whether he is driving one mile per hour or 100 miles per hour, being asked to pay some amount of money that is a function of his speed. The Inequity Model is not particularly useful or generalizable if that is the only sort of scenario to which it applies.

So wherever we draw the line, wherever we switch from no penalty to some nontrivial penalty, the Inequity Model will tell us that drawing the line is unfair. And yet, we must draw the line. Now we get to the tremendously difficult heart of the matter. If driving 64 miles an hour is not speeding, how can driving 66 miles an hour be speeding? If one grain of sand is not a heap, and there is no important difference between one grain of sand, and two grains of sand, and so forth, then how can a million grains of sand be a heap?[30] This is the problem of line-drawing and of vagueness, and it is an old and very, very difficult problem that has generated much scholarship over the years.[31] Borden suggests that the inability to apply his model "may signal the law's failure to identify the purpose for drawing the line."[32] But the inability to apply his model to a particular scenario may also signal the

30. *See supra* note 1 and accompanying text.

31. The nonlegal sources on this topic go back at least to the ancient Greeks. More recently, legal scholars have also wrestled with the question. *E.g.*, Frederick Schauer, *Slippery Slopes*, 99 HARV. L. REV. 361, 378–81 (1985).

32. Borden, *supra* note 2, at 1036.

model's failure to incorporate the necessary vagueness in so many terms and decisions that the law must address.

V. CONCLUSION

Borden's Article makes a valiant attempt to attack a longstanding problem. The Article does not, however, sufficiently justify the assumptions on which the model it presents depends, including definitions of fairness and of normative tax liability, and it is hard to understand how the model could apply to other areas of law without requiring similarly problematic and contentious assumptions. The particular model Borden's Article presents is, in short, too contingent to focus intuitions about line-drawing and fairness. Nonetheless, the quantitative approach to fairness has tremendous potential, and Borden's ambitious article raises important and difficult questions.

APPENDIX A

Gain = $0.5 + 0.01N$
Actual Tax Liability = $0.15(0.5 + 0.01N)$ OR $= 0.35(0.5 + 0.01N)$
Normative Tax Liability = $(0.15 + 0.001N)(0.5 + 0.01N)$
X subject to the actual rate of 35%, N subject to the actual rate of 15%
Single-reference-point inequity = SRP

$$SRP = \left|1 - \frac{Actual\ Tax\ Liability\ for\ X - Actual\ Tax\ Liability\ for\ N}{Normative\ Tax\ Liability\ for\ X - Normative\ Tax\ Liability\ for\ N}\right|$$

$$= \left|1 - \frac{0.35(0.5 + 0.01X) - 0.15(0.5 + 0.01N)}{(0.15 + 0.001X)(0.5 + 0.01X) - (0.15 + 0.001N)(0.5 + 0.01N)}\right|$$

$$= \left|1 - \frac{0.175 + 0.0035X - (0.075 + 0.0015N)}{0.075 + 0.0005X + 0.0015X + 0.00001X^2 - (0.075 + 0.0005N + 0.0015N + 0.00001N^2)}\right|$$

$$= \left|1 - \frac{0.1 + 0.0035X - 0.0015N}{0.002X + 0.00001X^2 + 0.002N - 0.00001N^2}\right|$$

$$= \left|1 - \left(\frac{0.1 + 0.0035X - 0.0015N}{0.002X + 0.00001X^2 + 0.002N - 0.00001N^2}\right)\left(\frac{10000}{10000}\right)\right|$$

$$= \left|1 - \frac{1000 + 35X - 15N}{20X + 0.1X^2 - 20N - 0.1N^2}\right|$$

$$= \left|1 - \frac{1000 + 35X - 15N}{(0.1)(200X + X^2 - 200N - N^2)}\right|$$

$$= \left|1 - \frac{1000 + 35X - 15N}{(0.1)(X - N)(200 + X + N)}\right|$$

APPENDIX B

Gain = $0.5 + 0.01N$
Actual Tax Liability = $0.15(0.5 + 0.01N)$
Normative Tax Liability = $(0.15 + 0.001N)(0.5 + 0.01N)$
X and N subject to the actual rate of 15%
Single-reference-point inequity = SRP

$$SRP = \left|1 - \frac{Actual\ Tax\ Liability\ for\ X - Actual\ Tax\ Liability\ for\ N}{Normative\ Tax\ Liability\ for\ X - Normative\ Tax\ Liability\ for\ N}\right|$$

$$= \left|1 - \frac{0.15(0.5 + 0.01X) - 0.15(0.5 + 0.01N)}{(0.15 + 0.001X)(0.5 + 0.01X) - (0.15 + 0.001N)(0.5 + 0.01N)}\right|$$

$$= \left|1 - \frac{0.075 + 0.0015X - (0.075 + 0.0015N)}{0.075 + 0.0005X + 0.0015X + 0.00001X^2 - (0.075 + 0.0005N + 0.0015N + 0.00001N^2)}\right|$$

$$= \left|1 - \frac{0.0015X - 0.0015N}{0.002X + 0.00001X^2 + 0.002N - 0.00001N^2}\right|$$

$$= \left|1 - \left(\frac{0.0015X - 0.0015N}{0.002X + 0.00001X^2 + 0.002N - 0.00001N^2}\right)\left(\frac{10000}{10000}\right)\right|$$

$$= \left|1 - \frac{15X - 15N}{20X + 0.1X^2 - 20N - 0.1N^2}\right|$$

$$= \left|1 - \frac{15X - 15N}{(0.1)(200X + X^2 - 200N - N^2)}\right|$$

$$= \left|1 - \frac{(15)(X - N)}{(0.1)(X - N)(200 + X + N)}\right|$$

$$= \left|1 - \frac{(15)}{(0.1)(200 + X + N)}\right|$$

$$= \left|1 - \frac{150}{(200 + X + N)}\right|$$