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THE BANKRUPTCY OF CONVENTIONAL TAX TIMING WISDOM IS DEEPER THAN SEMANTICS: A REJOINDER TO PROFESSORS KAPLAN AND WARREN

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ABSTRACT

The Haig-Simons ideal is an important normative concept. But using it requires that one specify a method of measuring the value of changes in wealth. I use market value and present value, the concepts of value employed in modern finance theory. Professors Kaplow and Warren disagree with a result that I show follows from those concepts of value: That the CFIT implements the Haig-Simons ideal in a non-general-equilibrium setting. But their critique is ineffective because they do not present an alternative concept of value and give reasons for using it in the definition of the Haig-Simons ideal instead of market value or present value. It is questionable whether such an alternative concept can be constructed that is also consistent with the idea of value contained in modern finance theory.

Professors Kaplow and Warren generally agree with my position that it is important to take general equilibrium effects into account in assessing alternative tax policies. But their attempt to make a general equilibrium argument for the equivalence of the CFIT and yield exemption fails. In fact, using their approach reinforces the conclusion in my original article that the equivalence holds in a non-general-equilibrium setting only for breakeven transactions.

The Bankruptcy of Conventional Tax Timing Wisdom is Deeper Than Semantics: A Rejoinder to Professors Kaplow and Warren

by Jeff Strnad*

My original article made two major points. First, it showed that a cash flow income tax ("CFIT") rather than what I call the "traditional income tax" implements the Haig-Simons ideal in a non-general-equilibrium setting. The Haig-Simons ideal requires that the tax base be consumption plus the change in net wealth in each accounting period. By "traditional income tax," I mean a tax that requires "economic depreciation" treatment of investment costs as opposed to the cash flow treatment of the CFIT. Since the conventional wisdom is that the traditional income tax best implements the Haig-Simons ideal, my conclusion, if accepted, would require Haig-Simons advocates to favor the CFIT in a non-general-equilibrium setting.

Second, I made the methodological claim that much tax policy analysis is incorrectly transactional in nature, in that it focuses on transactions rather than people and does not adequately consider the effect of various tax regimes on prices such as interest rates. Tax regimes often do have major impacts on prices, and particular transactions usually are not accurate proxies for particular individuals in both the tax and no tax worlds. As a result,

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transactional analysis should be rejected wherever possible in favor of a general equilibrium analysis that focuses directly on the impact of the tax system on people. General equilibrium analysis does attempt to consider the actual economic effects of changes in the tax laws. Results derived in a non-general-equilibrium setting, including my own linking the CFIT to the Haig-Simons ideal, deserve to be treated with caution.

Professors Kaplow and Warren respond to both of my major conclusions. First, they disagree with the result that the CFIT rather than the traditional income tax implements the Haig-Simons ideal in a non-general-equilibrium setting. In section I of this rejoinder I show that the claims on which their disagreement is based are groundless. Much of our debate on this issue follows from a simple fact: Because the Haig-Simons ideal requires changes in net wealth to be taxed, the analyst must specify the value of such changes. Professors Kaplow and Warren claim that my results follow tautologically from my use of the modern finance theory concept of present value as a measuring rod. But they do not make or cite a viable argument for an alternative measure of value.

Second, Professors Kaplow and Warren agree with me that a general equilibrium analysis focusing on individuals is preferable to transactional analysis, but they quarrel with several points in my original article. I address each of their points in section II. Their most important argument consists of an example that they claim illustrates the equivalence of the CFIT with "yield exemption," exclusion of investment and borrowing transactions from taxation. But, as I show below, careful examination of their example strongly reinforces the conclusions in my original article that the CFIT and yield exemption generally are not equivalent.

In summary, the response by Professors Kaplow and Warren does not seriously challenge any of the major conclusions in my original article.

I. The CFIT and the Haig-Simons Ideal

The portion of my article analyzing various tax treatments using the Haig-Simons ideal in a non-general-equilibrium setting proceeds in three logical steps.[1] Step (i) is to set out the Haig-Simons ideal as conventionally defined. That conventional definition includes changes in the "value" of wealth holdings in the tax base. As step (ii), I choose to use after-tax present value in the tax world and present value in the no tax world as the relevant concepts of value. Step (iii) is a showing that with the conventional definition of the Haig-Simons ideal and present value as the concept of "value," the CFIT rather than the traditional income tax implements that ideal in a non-general-equilibrium setting.

There is no difference of opinion between myself and Professors Kaplow and Warren on step (i), the statement of the Haig-Simons ideal. Both my article and their response cite the conventional formulations:

1. There are many potent criticisms of the Haig-Simons ideal and of the use of tax base ideals in general. For a good summary of some of these criticisms see R. TRESCH, PUBLIC FINANCE: A NORMATIVE APPROACH 267-274 (1981). It is not my intention to defend or attack the Haig-Simons ideal or tax base ideals in general. My goal is to show that the Haig-Simons ideal does not imply the tax treatments of investment and borrowing transactions usually associated with it.

"Personal income may be defined as the algebraic sum of (1) the market value of rights exercised in consumption and (2) the change in the value of the store of property rights between the beginning and the end of the period in question."[2] (Henry Simons)

"Income is the <u>money value of the net accretion to one's economic power between two points in time.</u>"[3] (Robert Haig)

Neither of these definitions is self-executing. At least two additional specifications must be made in order to apply them. First, one must have a way of measuring after-tax results in a world with taxes. Second, one must choose a baseline measure to assess the after-tax results. In each case, the concept of "value" in the definitions must be clarified. Step (ii) in my article is to use present value to define both the after-tax results and the baseline.

Professors Kaplow and Warren do not quarrel with step (iii) in my article, the showing that in a non-general-equilibrium setting the CFIT rather than the traditional income tax implements the Haig-Simons ideal given that present value is used to measure after-tax results and to establish a baseline in the no tax world. Indeed, they find this part of the analysis "simply a tautology."[4] This is a strange criticism. All good analysis is tautological in the sense that its conclusions are implied by its premises. The trick or skill is to see what particular premises (such as the conventional statement of the Haig-Simons ideal) do imply. This

2. H. SIMONS, PERSONAL INCOME TAXATION 225 (1938).

3. Haig, <u>The Concept of Income -- Economic and Legal Aspects</u>, in THE FEDERAL INCOME TAX 1,7 (R. Haig ed. 1921).

4. Kaplow and Warren, <u>An Income Tax by any Other Name -- A Reply to Professor Strnad</u>, 38 STAN. LAW REV. 399, 400 (1986) (hereinafter cited as "Reply").

task occupied much of my article and occupies much of any thoughtful tax policy analysis.

Professors Kaplow and Warren do have a real criticism, however. This involves my step (ii), the choice of present value to measure after-tax results and the no tax world baseline. They make two kinds of arguments against this approach. The first kind are analytic in nature. In a footnote, they quote the definition from Robert Haig set out above and suggest that perhaps the problem is that "money value" and not "present value" is the proper concept.[5] Presumably, "money value" in that definition refers to "market value." Their main argument in text compares my analysis at the instant after investment occurs to what happens over the entire life of an investment.[6] This amounts to comparing my analysis for an accounting period consisting of the instant after investment to the result for a longer accounting period.

I address these specific arguments and more general aspects of Professor Kaplow and Warren's approach in sections A through C. The analysis in sections A and B establishes several points using the same example that Professors Kaplow and Warren use in their response. Each of these points demonstrates the robustness of the result that the CFIT implements the Haig-Simons ideal in a non-general-equilibrium setting. First, that result is independent of whether one uses market value or present value as a baseline measure or as a measure of the after-tax outcome to be compared to the baseline. Second, it does not matter whether one uses the no

5. See Reply, supra note 4, at 408 n. 39.

6. See Reply, supra note 4, at 407-09.

tax world or the pre-tax results in the tax world in constructing the baseline measure. Finally, the result is independent of the accounting period.

The first and final points combined with the discussion that follows in section C address Professor Kaplow and Warren's specific arguments. But the analysis in sections A and B also raises the issue of whether Professor Kaplow and Warren implicitly reject use of modern finance theory to define "value" in applying the Haig-Simons ideal. They do not believe that the CFIT necessarily meets the Haig-Simons ideal in a non-general-equilibrium setting. But the three points demonstrate that that result follows independent of which of the common candidates for measuring the baseline or after-tax outcome one adopts if one computes the value of wealth changes in a manner consistent with modern finance theory.

Readers who find the three points intuitively clear or who wish to focus first on a direct discussion of the issues that Professors Kaplow and Warren raise may profitably omit sections A and B. In section C I discuss their own analysis and conclude that their position either results from confusion concerning accounting periods or requires rejecting the use of modern finance theory to interpret "value."

Professors Kaplow and Warren also make a second kind of argument against my use of present value as a concept of value. They note that Haig, Simons, and many others see the CFIT as a form of consumption tax that does not meet the ideal that Haig and Simons specified. Since the CFIT necessarily implements that ideal given my concept of value, rejection of the CFIT by Haig and Simons implies a rejection of that concept of value.[7] This argument is not really an analytic argument at all. It holds that Haig and Simons are the authoritative expositors of how their own ideal is to be applied. But the Haig-Simons ideal is just that -- an ideal -- and in my opinion Haig and Simons misunderstood what concept of value best implements it. This is unsurprising. Modern finance theory conceptions of value were not as dominant when Haig and Simons wrote as today. As Professors Kaplow and Warren point out, some, such as Irving Fisher, used such conceptions of value even in the days of Haig and Simons.[8] In section D, I provide an economic and historical perspective on our debate that locates my arguments relative to those of Fisher and his modern successors. This complements the discussion in my original article that dealt only with Fisher's successors and not with Fisher himself.[9]

A. Analysis at Time 0

This section shows that the result that the CFIT implements the Haig-Simons ideal is independent of the choice of various market value and present value concepts as measures of after-tax outcomes and of a baseline against which to test those outcomes. In this section the focus is on the time of investment. Section B shows that the independence result generalizes to any accounting period. The Appendix contains a more technical demonstration of some of the points in the text.

7. See Reply, supra note 4, at 409-11.

8. See Reply, supra note 4, at 399-400.

9. See Strnad, Taxation of Income from Capital: A Theoretical Reappraisal, 37 STAN. L. REV. 1023, 1069-71 n. 108 (1985).

Consider the example used by Professors Kaplow and Warren: A riskless investment in the no tax world consists of expending 100 at time zero to obtain 121 in revenues at time 1. The no tax world riskless rate of return is assumed to be 10%, and this implies that the present value of 121 dollars to be received at time 1 is 110 at time 0.[10] In the no tax world, this present value of 110 at time 0 is also the market value at time 0 of the right to receive 121 at time 1. People can borrow and lend freely and without risk at 10% in the no tax world. Thus, the right to receive a payment risklessly one period in the future will sell for whatever price will result in a 10% riskless return. In this case that price is 110 since 110 x 1.1 = 121.

Since the 110 is 10 greater than the cost of 100 for our investor, the investor is making an instantaneous profit of 10 by making the investment. The investor could realize this gain immediately by selling the right to the 121 for 110 right after investing the 100. This potential profit of 10 from sale at time 0 is equal to the "net present value" of the investment, the present value of 110 minus the time 0 cost of 100.

Suppose the CFIT applies in the example.[11] Then the taxpayer

10. With a 10% discount rate, the present value of 121 is 121/(1.1) = 110. For a discussion of the concepts of present value and net present value, see Strnad, supra note 9, at 1044-45. That discussion includes an algebraic exposition of the concepts. See id.

11. Throughout the analysis in this rejoinder, I make the same simplifying assumptions about tax rate structure and the tax treatment of losses that I make in the bulk of my original article. Thus, tax rates are taken to be constant over time and to be independent of the amount of income (no progressivity or regressivity), full loss offsets are assumed to be available, and there is no special rate on capital gains. For a discussion of

will receive a deduction of 100 at time 0 and will have taxable income of 121 at time 1. As I demonstrated in my original article, the after-tax riskless interest rate in a world with a CFIT will be the same as the no tax world riskless interest rate if one ignores general equilibrium effects.[12] That is, investors will evaluate after-tax returns using the same 10% riskless rate as in the no tax world.

Now what will be the market value at time 0 of the right to receive 121 before-tax at time 1 if the CFIT applies? The answer is 110. If a person buys the right at time 0 for 110, that person will deduct 110 at that time. Assuming a tax rate of .50 the deduction reduces the after-tax investment to 55. At time 1, the person will receive 60.5 (= 121/2) after tax at time 1. But 60.5 is exactly 10% larger than 55. The 110 market price is right: The bargain is struck so that the after-tax market rate of return ensues. Note that this tax world market price of 110 is equal to the market value and present value in the no tax world.

One can also define a "pre-tax present value" in the tax world. This is the present value of a transaction assuming it is the only untaxed transaction in that world. The relevant riskless rate to use in evaluating such an investment is the after-tax riskless rate since this is the rate available on other investments.[13] In our example, this means that the pre-tax present

these assumptions and their appropriateness given the points that I wish to make, see Strnad, supra note 9, at 1042-43.

12. See Strnad, supra note 9, at 1053-56.

13. See Strnad, supra note 9, at 1062 n. 93.

value is the same as the no tax world present value. Both involve valuing the right to receive 121 at time 1 using a 10% riskless rate, and the result is 110.[14]

The example demonstrates that under the CFIT in a non-general-equilibrium setting the no tax world present value, the no tax world market value, the tax world market value, and the tax world pre-tax present value are all the same. It does not matter which is used as a benchmark in testing the CFIT against the Haig-Simons ideal. Using any of them as benchmarks, in the example there is an instantaneous increase in wealth of 10 at time 0: Present value or market value of 110 results from an investment with cost 100.[15]

Now consider the measurement of the after-tax outcome that will be compared to one of the benchmarks. Suppose the investor is in the 50% bracket at all times. Then the 100 investment is only 50 after tax, and the investor will receive only 60.5 at time 1 after tax. The net present value calculated using a 10% after-tax riskless rate is 60.5/1.1 - 50 = 5. If the investor sells the investment at market value right after it is made, the investor

14. This point generalizes: For a riskless investment, the pre-tax present value will be the same as the no tax world present value in a non-general-equilibrium setting if the after-tax riskless rate is the same as the no tax world riskless rate. See Strnad, supra note 9, at 1061-62.

15. In his past work Professor Warren has stated that under the Haig-Simons ideal a tax should be imposed on the difference in wealth ex post between two points in time. See Warren, Would a Consumption Tax Be Fairer Than an Income Tax?, 89 YALE L. J. 1081, 1118-19 (1980). Presumably, these ex post changes are changes in one of the four benchmarks listed here. See text accompanying notes 31-34 and note 33 infra (discussing definition of the value of changes in wealth).

will be left with 5 after-tax: The sale is at 110 yielding 55 after tax versus an after-tax investment cost of 50. Thus, after-tax sales value and net present value are identical measures of the after-tax outcome.

To summarize the results so far, consider the following possibilities for benchmarks and measures of changes in after-tax wealth at time 0:

Table 1

benchmark	measure of change in after-tax wealth
(1) change in no tax world market value	(A) net present value
(2) change in tax world market value	(B) after-tax gain if sold
(3) change in no tax world present value	
(4) change in tax world pre-tax present value	

In the example, it does not matter which measure of after-tax wealth change one chooses from the second column, and it does not matter which benchmark one chooses from the first column: In each case for a 50% bracket taxpayer the benchmark increases by 10 and after-tax wealth changes by 5. The result is not peculiar to this particular example. In the Appendix I use some elementary algebra to show that in a non-general-equilibrium setting the equivalence of the benchmarks and the equivalence of the measures of after-tax outcome hold for any investment or borrowing transaction under the CFIT.[16]

There is an argument that tax base theory requires use of the

16. See text accompanying notes 69-70 infra (Appendix Propositions 1 and 2 and associated discussion).

no tax world as a basis of comparison.[17] There are also arguments about the choice between market value and present value as a benchmark in various situations and about whether one should use after-tax gain if sold or net present value as a measure of the value of the change in wealth.[18] But the outcome of these arguments will not alter the result that the CFIT implements the Haig-Simons ideal in a non-general-equilibrium setting. That result is true whether one uses market value or present value, whether one uses the no tax world or the pre-tax situation in the tax world as a basis for comparison, and whether one considers the case where the investment is sold or the case where it is not.

Furthermore, with one exception, the traditional income tax generally does not implement the Haig-Simons ideal in a non-general-equilibrium setting under any combination of one of the benchmarks and one of the measures of the after-tax change in wealth from the table above. The exception is when (B) is compared to (2). In this case, changes in tax world market value will result in changes of one minus the tax rate as large in after-tax sales value. This is because gain under the traditional income tax when an asset is sold is measured by the change in tax world market value. Comparing the traditional income tax with the Haig-Simons ideal under the other combinations of benchmark and measure of

17. See Strnad, supra note 9, at 1035-1036. Professor Warren takes this position in some of his earlier work. See id. at 1040 n. 52.

18. The Appendix provides some discussion about the meaning of various benchmarks and measures of the value of after-tax changes in wealth. See text accompanying notes 66-67 infra and note 73 infra. But it is not necessary to provide a comprehensive analysis of those issues here, and I do not attempt to do so.

after-tax outcome is a bit complex, and this task is relegated to the Appendix.[19]

The equivalence of the measures of after-tax outcome for the CFIT in the second column of Table 1 has a significance that will be familiar to tax scholars. For instantaneous changes in net wealth at time 0 the CFIT is acting as the ideal accrual based income tax under the Haig-Simons standard. If a .50 taxpayer holds the investment at that time, his net present value is 5 which is half of the instantaneous increase in market value (in either the tax or no tax world). In effect, that taxpayer has been taxed on his accrued gain at time 0. The result is the same as if the taxpayer sells immediately after making the investment at time 0: There is a tax of 5 on an increase in wealth of 10. The traditional income tax does not have this quality of being an ideal accrual based tax under the Haig-Simons standard.[20] Any such tax must be equivalent to the CFIT.[21]

19. See note 27 infra (describing the Appendix results).

20. After-tax net present value is the value to the investor of the increase in wealth at time 0 if the investment is not sold immediately at that time. But under the traditional income tax, that net present value generally will not relate in a Haig-Simons manner to the change in market value at time 0 in either the tax world or the no tax world. See text accompanying notes 72-73 infra (Appendix Proposition 5, tax world market value as benchmark) and Strnad, supra note 9 at 1078-80 (summarizing results with no tax world market value as benchmark).

Note also that if the traditional income tax involves less favorable cost recovery treatment than the CFIT, net present value will be higher than after-tax gain if sold. See note 73 infra. Thus, the taxpayer will be better off holding the investment than selling it.

21. Since the CFIT implements the Haig-Simons ideal at time 0, any tax that implements that ideal must provide cost deductions for investment transactions that are equivalent in present value to the expensing treatment of the CFIT. Thus, if cost deductions are delayed compared to CFIT treatment, they must be increased in size an appropriate amount in compensation for the delay.

This example also illustrates an important point that I made in my original article that follows from applying modern finance theory to tax base analysis: The realization doctrine does not necessarily result in a deviation from the Haig-Simons ideal when one takes into account the fact that future taxes reduce the present value of increases in the value of an investment for the person who does not realize income from the investment by sale or otherwise.[22]

B. The Irrelevance of the Choice of Accounting Period: Times After Time 0

In the examples in section A, the accounting period consisted of an infinitesimal amount of time after time 0. Where the accounting period is the calendar year, this approximates the case where revenues are not earned until many, many years after an investment is made. For example, the time interval between investment (time 0) and receipt of revenues (time 1) might be 1000 years. But only some investments fall into that category. Suppose, in contrast, that the accounting period is still the calendar year but that the time interval between investment at time 0 and the receipt of revenues at time 1 is 2 years. Then two assessments are of interest: the assessment made over the interval between time 0 and time 1/2 and the assessment made over the interval from time 1/2 to time 1.

In order to show that the results in section A will still

22. See Strnad, supra note 9, at 1039 n. 49.

apply if accounting periods other than an infinitesimal one following time 0 are considered, I extend the example to times between time 0 and time 1 by adding analysis at time 1/4, time 1/2 and time 3/4.[23] As shown above, the market value (or equivalently the present value) of the investment at time 0 is 110 and at time 1 is 121 in both the no tax world and the CFIT world. The following table indicates the no tax world market value at each of the five times under the assumption that the riskless interest rate is constant over the period and compounds to 10% for the whole period.[24]

Table 2

time	market value (= present value)
0	110
1/4	112.65
1/2	115.37
3/4	118.15
1	121

By reasoning analogous to that for time 0, it can be shown that the no tax world market value and the CFIT world market value

23. For an algebraic treatment of the times between time 0 and time 1, see Strnad, supra note 9, at 1084-89.

24. The results drawn from the example would not change if the riskless interest rate were allowed to vary over the period. See Strnad, supra note 9, at 1084-85.

A constant interest rate that compounds to 10% over the period is generated by solving for r in the equation $e^r = 1 + .10$. Then the interest rate over a period of length t is r(t) where $r(t) = e^{rt} - 1$. For example, the interest rate for a period of length 1/4 would be about 2.41%. If you invest 110 at that rate for the first quarter you end up with 112.65 at the end of that quarter. Reinvesting that at the same interest rate yields 115.37 at time 1/2. Continuing to reinvest the proceeds at the end of each quarter yields 121 at time 1.

are identical.[25] The present value of the investment in the hands of a 50% bracket taxpayer will be exactly one-half of this market value since half of the final return of 121 at time 1 will be taxed away at that time.[26] As a result, this taxpayer will experience exactly one-half of the increase in market value as an increase in present value. This is illustrated by the following table:

25. For example, take the 50% bracket taxpayer and the investment at time 3/4. If the taxpayer buys at 118.15, the after-tax cost will be 59.075. At time 1, the taxpayer will receive 60.5 after tax. This results in rate of return of (60.5 - 59.075)/59.075 = .0241. But that is precisely the riskless rate of return for investing for 1/4 of a period. See note 24 supra and recall that the riskless rate of return in the no tax world is the same as the after-tax riskless rate of return in a world with a CFIT. See text accompanying note 12 supra.

26. This is the after-tax present value which is the value that the investor will see in the investment. The pre-tax present value will be identical to the market value by arguments similar to those at text accompanying notes 10 and 13-14 supra.

In general, the after-tax present value under the CFIT will be (1 - T) times the market value where T is the marginal tax rate of the taxpayer. This is because under the CFIT, all cash flows are reduced by the factor (1 - T) before discounting them to after-tax present value. As a result, that present value will be (1 - T) less than the market value which is equal to the pre-tax present value. See Strnad, supra note 9, at 1068-69 (same point made algebraically for changes in present value at time 0). See also Reply, supra note 4, at 404 n. 22 (repeating the algebraic argument made in Strnad, supra note 9, at 1068-69 for the special case of a riskless investment).

This intuition and the fact that present value and market value are discounted cash flows lead Professors Kaplow and Warren to call the result that the CFIT meets the Haig-Simons ideal a "tautology." See Reply, supra note 4, at 403. Nonetheless, if present value or market value are the proper concepts of value, then the result is true and meaningful. See text accompanying notes 1-6 supra and text accompanying notes 31-36 infra.

Table 3

time	market value	present value (to .50 bracket taxpayer)
0	110	55
1/4	112.65	56.325
1/2	115.37	57.685
3/4	118.15	59.075
1	121	60.5

Consider the investor who holds the investment between the time 1/4 and the time 3/4. Market value has increased by 118.15 - 112.65 = 5.5 and present value has increased by 2.75. Similarly, an investor who bought the investment at time 1/4 and sold it at time 3/4 would make an after-tax profit of 2.75 at time 3/4. This illustrates that the CFIT functions as a perfect <u>accrual</u> type of income tax under the Haig-Simons doctrine. Even if the investor does not sell an investment, the value of the investment in his or her hands is reduced at each moment by the appropriate tax rate. Furthermore, this value is identical to the value that would be realized after-tax on sale. The traditional income tax does not have these qualities.[27]

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27. The analysis of the traditional income tax is complicated by the fact that under that tax it is generally true that
(1) changes in no tax world market value are not equal to the corresponding changes in tax world market value;
(2) changes in after-tax sales value differ from the corresponding changes in present value.
<u>See</u> text accompanying note 72 <u>infra</u> (Appendix Propositions 3 and 4). Consider the following table from the Appendix:

Table 4

benchmark	measure of change in after-tax wealth
(1) change in no tax world market value	(A) change in present value (at time 0: net present value)
(2) change in tax world market value	(B) change in after-tax sales value (at time 0: after-tax gain if sold)

C. Value According to Professors Kaplow and Warren

So far I have shown that in a non-general-equilibrium setting the CFIT is the ideal accrual-type income tax under the Haig-Simons criterion and that this showing is independent of the "accounting period" considered. It does not matter whether one is considering the infinitesimal period at and after time 0 (to analyze how taxes impact on "instantaneous" changes in wealth at time 0), the entire period between time 0 and time 1, or some smaller period between those two times.

In criticizing my position, Professors Kaplow and Warren make the mistake of comparing my results for an infinitesimal period at and after time 0 to the changes in wealth that occur over the longer accounting period from time 0 to time 1. They construct an example of an investment that costs 100 at time 0 and yields 110 at

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In my original article, I show that the traditional income tax does not meet the Haig-Simons ideal when that ideal is applied by comparing (A) with (1). The Appendix shows that the same result is true for interpretations of the Haig-Simons ideal that involve comparing (A) with (2) or (B) with (1) but not for an interpretation that compares (B) with (2). <u>See</u> text accompanying notes 70-73 <u>infra</u> (Appendix Propositions 5 - 7 and related discussion). In the case where (B) is compared to (2), after-tax gain is exactly (1 - T) times the change in tax world market value where T is the tax rate. That result is true because an increase in tax world market value will be taxed at the statutory rate upon sale of the investment under the traditional income tax.

The table above does not contain the benchmarks consisting of changes in present value in the no tax world and changes in pre-tax present value in the tax world. These are not necessary. Present value and market value are equivalent benchmarks in the no tax world. <u>See</u> text accompanying note 10 <u>supra</u> and text accompanying note 69 <u>infra</u>. Pre-tax present value in the tax world is the same as no tax world market value and present value if the after-tax discount rate in the tax world equals the no tax world discount rate. See note 14 <u>supra</u>. Furthermore, using a different assumption about how taxes affect discount rates would not lead to the Haig-Simons ideal being met when pre-tax present value is the benchmark.

time 1. This investment does not cause any change in wealth at time zero given a riskless discount rate of 10%. They then state that "the taxable change in wealth under the Haig-Simons approach is $10, not zero,..."[28] They also note that at time zero, the net present value of the taxes that the government will collect is zero. In making that observation, they implicitly assume that the proper discount rate for government revenues is the same as the discount rates that individuals use in evaluating their investment and borrowing transactions.[29] They claim that this example shows that I have defined income differently from the standard Haig-Simons formulation.

But at time 0 the Haig-Simons income from this investment is zero. The investor holds an investment that has a market value and present value equal to its cost of 100. No change in wealth has yet occurred. It is only after time zero that the investment increases in value to the final amount of 110 at time 1. It is therefore entirely appropriate that the net present value of government revenues at time 0 (calculated using the same discount rate that the investor uses) is zero. If the increase of $10 that occurs after time zero is of concern, then an analysis like that in

28. See Reply, supra note 4, at 407.

29. Cf. Strnad, supra note 9, at 1066 n. 102 (government revenues may be discounted at a different rate than the after-tax discount rate that individuals use).

Applying a 50% tax rate in their example, the government gives up 50 in taxes at time 0 due to the taxpayer's deduction of 100 and gains 55 in taxes at time 1. Using a 10% discount rate, government revenues have zero net present value because the time 0 present value of the 55 in tax revenues is 55/(1.1) = 50 which is equal to the 50 in revenues given up at time 0.

section B is appropriate.[30]

Thus, one possible source of Professors Kaplow and Warren's rejection of my claim that the CFIT and not the traditional income tax implements the Haig-Simons ideal in a non-general-equilibrium setting is the one that we have just examined. They may have failed to distinguish properly between different accounting periods.[31] But there is another possibility. They may define "value" in a way that is foreign to modern finance theory.

If this second possibility is true then Professors Kaplow and Warren arguably are engaging in exactly what they accused me and Irving Fisher of doing: defining terms to insure that a certain result (the traditional income tax) follows from the words of a norm (the Haig-Simons ideal) that is popular.[32] We agree on the Haig-Simons definition of income as stated in their response and

30. In this example, the CFIT and any other tax that allows a a total deduction of 100 spread out in any manner between time 0 and time 1 inclusive will result in a tax on a gain of 10. If that entire period is the accounting period and all the Haig-Simons ideal requires is that only 10 be taxed in net, then all of these taxes meet the ideal. But only the CFIT will meet the Haig-Simons ideal for any accounting period when changes in wealth are measured by market value or present value.

31. Professors Kaplow and Warren also may have been confused by my point that to assess the initial desirability of an investment, the net present value at time 0 is the appropriate criterion. See Strnad, supra note 9, at 1086 n. 144 (original point) and Reply, supra note 4, at 405 n. 26 (interpretation by Professors Kaplow and Warren). All this is saying is that a person considering making an investment at time 0 will look at net present value at that time. That net present value takes into account all the anticipated future revenues and costs for the investment.

Under Haig-Simons theory, however, no particular time is more important than any other. This is because the accounting period of interest may be any particular slice of an investment's life. For this reason I was careful in my original article to analyze each possible time period.

32. See Reply, supra note 4, at 410.

the beginning of this rejoinder. But we may disagree about the meaning of the word "value." I attribute to that word the idea of market value or present value and use elementary finance theory to compute these values in a non-general-equilibrium setting. If "value" does not mean market value or present value, what does it mean?[33] There are value concepts that would reject the CFIT as implementing the Haig-Simons ideal in a non-general-equilibrium setting, but these concepts are in open conflict with modern finance theory.[34] To adopt one of them would be to flout the usual meanings given to the word "value" under that theory.

There is more than a mere debate about semantics here. The Haig-Simons ideal expresses an important normative idea: that a fair tax would tax changes in the value of a person's stock of wealth. In a non-general-equilibrium setting the CFIT taxes these changes <u>as they occur</u> if value is taken to mean market value or present value. The traditional income tax does not.

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33. Professors Kaplow and Warren state at one point that "[a]dvocates of the Haig-Simons concept can consistently understand that wealth at any moment is the present discounted value of future flows ...." <u>See</u> Reply, <u>supra</u> note 4, at 409. At another point they refer to Haig's use of the term "money value" instead of present value. <u>See</u> <u>id</u>. at 408 n. 39. These seem to suggest an acceptance of present value and/or market value as the meaning of "value" in the Haig-Simons definition.

34. Consider Professors Kaplow and Warren's example of an investment that costs 100 at time 0 and yields 110 at time 1 when the discount rate is 10%. If one <u>defines</u> the change in value for this investment to be no change until time 1 and then an increase of 10, then the appropriate "Haig-Simons" tax treatment would be to allow no cost recovery until the end. But under elementary finance theory, the increase in value of the investment occurs <u>gradually</u> between times 0 and 1. Similar definitions of "value" can be constructed to justify less drastic delays in cost recovery from the moment cost is incurred. But they also conflict with conceptions of value under modern finance theory.

As discussed in the introduction, there is an historical argument for an alternative interpretation of the term "value."[35] Given the belief by Haig and Simons that their ideal is met by the traditional income tax and not by the CFIT, they must have shared in some such alternative interpretation. But is there any normative reason to cling to this historical practice? Professors Kaplow and Warren do not present one. Market value and present value take into account the time value of money in a way that is considered standard and unobjectionable in the economics profession and in business practice. This would seem the proper way to interpret the ideal that Haig and Simons originally stated.

Each of us, like Humpty Dumpty, can assert the right to define terms as we please. But defining value so that it does not coherently allow for the time value of money in all accounting periods has serious substantive overtones. Why would anyone want to do that?[36]

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35. <u>See</u> text accompanying notes 7-8 <u>supra</u>.

36. Professors Kaplow and Warren begin their response with a quote from Henry Simons suggesting that much of our debate is about terminology rather than substance. In that passage Simons was suggesting that the same was true concerning his debate with Irving Fisher. A passage from Fisher published a year earlier than the one quoted from Simons is instructive on this point:

> "It is my earnest hope that the foregoing presentation of the income problem will carry conviction. So far as I can see, the only possible controversy will be over terminology. Some persons, while admitting all my contentions as true under my concept of income may prefer still another income concept....
>
> I might claim that it ought not be a serious matter -- that anyone has a right to define any word to suit himself. But this would be dodging the issue. For most people and for many economists words are more important than ideas."

Fisher, <u>Income in Theory and Income Taxation in Practice</u>, 5 ECONOMETRICA 1, 53 (1937).

I do not believe that Professors Kaplow and Warren are among

D. An Economic and Historical Perspective on the Debate

My original article points out that others have made similar arguments to mine,[37] and Professors Kaplow and Warren correctly observe that the lineage of these arguments extends back a half century to Irving Fisher. Fisher himself argued that changes in present value provide the proper benchmark against which to test an income tax and that this benchmark indicates that cash flow is the appropriate tax base.[38] He did not, however, discuss how the after-tax result that will be compared against the benchmark should be measured. Thus, he does not consider the possibility that discount rates (either the riskless component or the risk premium) are altered by a CFIT tax system. My original article makes two points concerning this possibility. First, the CFIT will have the general properties envisioned by Fisher only when discount rates remain the same in the CFIT world as in the no tax world. Second, assuming that the discount rates do remain the same is legitimate under either of the two major conceptions of what it means to ignore general equilibrium price changes.[39]

those for whom "words are more important than ideas." But they do not make any effective argument about why "value" in the Haig-Simons definition should not be interpreted in accord with modern finance theory: as present value or market value. Neither do they propose or defend any alternative definition of value.

37. See Strnad, supra note 9, at 1069 n. 108.

38. See Fisher, supra note 36, at 4-10, 24-25.

39. One major conception is that the after-tax rate of return for any given investment (regardless of riskiness) is the same in the CFIT world as in the no tax world. The other is that each investment will have the same pre-tax rate of return in the CFIT world as in the no tax world. Under either conception, assuming that the discount rate is the same in the CFIT world as in the no tax world is appropriate. See Strnad, supra note 9, at 1053-56.

Fisher's successors have traditionally focused on the consumption streams of individuals over time while my original article and parts of Fisher's work focus on transactions that extend over more than one accounting period.[40] I see two interesting points that follow from this difference in emphasis.

First, assumptions about the impact of taxes on discount rates have different implications when one examines consumption streams as opposed to transactions. For example, consider the assumption that taxes have no impact on discount rates: The after-tax discount rate in the tax world is the same as the no tax world discount rate.[41] If consumption streams are the object of study, then the traditional income tax and the CFIT are equivalent under this assumption because individuals have the same opportunities to shift consumption between periods under either tax.[42] But at the same time the two taxes have different effects on particular transactions. Some transactions will be profitable under the CFIT but unprofitable if cost recovery is delayed under the traditional

40. See Strnad, supra note 9, at 1069 n. 108 (citing and discussing sources). This is clearly only a difference in emphasis because individuals use transactions to shift the timing of their consumption streams.

41. In my original article I called this assumption "the first view." It is one of two plausible non-general-equilibrium assumptions about the impact of taxes on discount rates. See note 39 supra. But it also may be an appropriate general equilibrium assumption in some instances. See Strnad, supra note 9, at 1054 n. 79 (first view may hold in cases such as the U.S. corporate tax where taxed investment sector is small compared to entire range of possible investments).

42. See Strnad, supra note 9, at 1071 n. 108 (final paragraph of note providing numerical example).

income tax.[43]

A second way that the contrasting emphasis on consumption streams and transactions is interesting is that it shows how the CFIT, ostensibly a consumption tax, can also be a tax on consumption plus the change in net wealth. Professors Kaplow and Warren find this a mystery that casts doubt on my position.[44] But it is no mystery: The taxes on future consumption streams that flow from an investment transaction reduce the pre-tax increase in wealth from that transaction by an appropriate amount during each period preceeding the consumption.

Consider the example from sections A and B. Suppose that a 50% tax rate applies, and the investor uses the transaction to reduce consumption by 100 at time 1 in order to consume 121 at time 1. From a consumption stream viewpoint, the CFIT is an ideal consumption tax: There is a deduction at time 0 of 100 to reflect the diminished consumption at that time and there is 121 in taxable income at time 1 to reflect the increase in consumption at that point.

At the same time, the tax is properly reaching the changes in net wealth during each accounting period. Consider an accounting period consisting of an infinitesimal time at and after time 0. The investment increases the investor's wealth by 10 during this

43. In a non-general-equilibrium setting individuals are insulated from these effects. They can invest at the same after-tax market rate of return under both tax regimes. See Strnad, supra note 9, at 1071 n. 108 (final paragraph of note indicates that under consumption stream analysis in a non-general-equilibrium setting only the market rate of return matters, not how particular investments are affected).

44. See Reply, supra note 4, at 411-12 n. 54.

period whether that increase is measured by the change in the market value of the investor's assets or by the change in the pre-tax present value of those assets.[45] But the after-tax profit if sold and the increase in after-tax present value if the investment is retained will only be 5. Thus, the investment transaction is treated in a Haig-Simons manner within the accounting period. The reduction of consumption by 100 in that period is reflected by the deduction of 100 at time 0: Only current consumption is in the accounting tax base. But at the same time the deduction combined with the tax at time 1 on 121 reduces the increase in net wealth at time 0 due to the investment by the proper amount even if the investment is not sold at that time.[46]

II. Transactional Analysis and Its Competitors

Tax policy analysis that proceeds by comparing particular transactions without taking into account the effect of the tax system on pre-tax prices is a technique that I called

45. And it does not matter whether this change in present value or change in market value is measured in the tax or no tax world. See text accompanying notes 14-16 supra.

46. A similar conceptualization appears in Aaron & Galper, A Tax on Consumption, Gifts and Bequests and Other Strategies for Reform, in OPTIONS FOR TAX REFORM 106, 112 (J. PECHMAN, ed. 1984). They note that:

> ... the expenditure tax base is simply the familiar Haig-Simons definition of income extended from one year to the lifetime and expressed in present value terms.... Because of its similarity to the annual Haig-Simons income tax, we shall refer to it as a lifetime income tax, because it would tax total consumption plus change in net worth over an individual's lifetime.

Id.

My argument extends this in a natural way. If the CFIT tracks market value or present value within the annual accounting period, it is an annual Haig-Simons income tax as well as a lifetime Haig-Simons income tax.

"transactional analysis" in my original article.[47] An alternative method examined there is to assess the effects of taxes on individuals "as accurately as possible" given existing economic technology. This often would involve using general equilibrium techniques that take into account the complex changes in pre-tax prices that may accompany any particular change in the tax system. Professors Kaplow and Warren agree that this alternative step is desirable.[48]

But they criticize my discussion in three ways. First, they claim that transactional analysis is a false target that is peculiar to my own original article. Second, they argue that I have set up a false dichotomy that ignores "intermediate" forms of analysis. Third, they criticize some of the applications of general equilibrium thinking in my paper. I deal with each of these criticisms in turn.

A. Transactional Analysis as a Target

Professors Kaplow and Warren state that all sophisticated tax policy analysts would concede that discussions of policy "should, to the extent feasible, take into account effects of the changes on taxpayer behavior."[49] I believe that, if pressed, many such analysts would make such a concession. But, at the same time, transactional analysis is used heavily in the legal and economic

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47. See Strnad, supra note 9, at 1023.

48. See Reply, supra note 4, at 400, 416.

49. Reply, supra note 4, at 414.

literature and the ensuing results are taken quite seriously.[50] It is not the "straw man" that Professors Warren and Kaplow suggest it is.[51]

It is also important to emphasize that part of my purpose in criticizing transactional analysis is to put the non-general-equilibrium results in my original article (and in part I of this rejoinder) in perspective. Those results point to the CFIT as implementing the Haig-Simons ideal but are based almost entirely on transactional analysis. I state explicitly that because of the weaknesses of transactional analysis these results

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50. The use of transactional analysis is so extensive that it seems pointless to give a series of examples. My original article cites some examples. See Strnad, supra note 9, at 1025 n. 5 and 1032 n. 29 (citing sources some of which rely partially or wholly on transactional analysis). Very recent examples of sophisticated tax policy scholars using transactional analysis to scrutinize investment and borrowing transactions are easy to find. See, e.g., Kiefer, The Tax Treatment of a "Reverse Investment: An Analysis of the Time Value of Money and the Appropriate Tax Treatment of Future Costs, 26 TAX NOTES 925 (1985) and the sources cited therein.

One of the most striking examples is mentioned by Professors Kaplow and Warren themselves in their reply. That is the Treasury Department's estimates of the revenue losses due to various tax expenditures. These estimates are explicitly premised on the assumption that behavior would be unchanged if the particular provisions were not in place. For example, the revenue loss estimate for the exemption of state and local bond interest from taxation assumes that if these bonds were not tax exempt the same people would buy the same quantities. See Reply, supra note 4, at 415 n. 68.

51. I do not mean to suggest that transactional analysis is always inappropriate. In some cases, a meaningful general equilibrium analysis of the impact of tax policy changes is not feasible. In my original article, I did not attempt to determine in general which cases fall into that category. See Strnad, supra note 9, at 1104-1105. But I did note that some important tax policy issues such as choosing between the current U.S. tax system and alternatives such as the CFIT, are currently amenable to a meaningful general equilibrium analysis.

should not be used as the basis of a new conventional wisdom.[52] But they should be taken as sufficient to reject the old conventional wisdom, that the traditional income tax implements the Haig-Simons ideal.[53]

B. "Intermediate" Forms of Analysis

Professors Kaplow and Warren criticize me for ignoring "intermediate" forms of analysis by positing general equilibrium analysis as the "polar" alternative to transactional analysis. In particular, they suggest that "partial equilibrium" analysis is sometimes appropriate. I agree and did not mean to imply otherwise in my original article. Partial equilibrium analysis is usually understood to mean limiting consideration to the impact of taxes on only one pre-tax price change, the one involving the taxed good or service.[54] There may be cases where for empirical or other reasons, policy analysis needs to be limited to examining only one

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52. See Strnad, supra note 9, at 1024, 1102-1104.

53. See Strnad, supra note 9, at 1037-38.

54. This is evident from public finance texts. See, e.g., R. BOADWAY and D. WILDASIN, PUBLIC SECTOR ECONOMICS 287, 322, 349 (2nd ed. 1984); R. TRESCH, supra note 1, at 306-307, 323. Thus, the term general equilibrium analysis covers cases that range from the simple examples in my original article and in the reply by Professors Warren and Kaplow where a few behavioral responses are taken into account to models with many production and consumption sectors, hundreds of equations, multiple time periods, and hundreds of behavioral parameters. Professors Kaplow and Warren suggest that general equilibrium analysis comprises only the situation where one includes "every relevant factor" in the analysis and also that it is limited to some fairly recent, complex empirical models. See Reply, supra note 4, at 414-15. But these limitations contradict the accepted definition of the term.

price change.[55] My main point is one that Professors Kaplow and Warren agree with: Tax policy analysts should use the best available techniques when they wish to make serious policy recommendations.[56]

C. Particular Applications of General Equilibrium Analysis

Professors Kaplow and Warren criticize two of the applications of general equilibrium analysis in my original article. One involves my discussion of the possibility that particular tax policies may affect the pre-tax interest rate. The more important of the two is my attack on the conventional defense of the principle that the CFIT is equivalent to yield exemption, the exclusion of capital transactions from the tax system. I deal with each of these in turn.

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55. For theoretical analysis of broad-based taxes such as the CFIT, the traditional income tax, or a sales tax covering many items, modeling almost always is general equilibrium in form. As a leading graduate textbook in public finance states:

> The only sound theoretical approach to public sector problems is general equilibrium analysis, which we will use exclusively throughout the text. Because of data and other resource restrictions, empirical analysis must frequently be partial in scope, but theoretical analysis suffers no such handicaps, nor should it. Specific instances of the pitfalls of theoretical partial equilibrium analysis abound in the public sector literature.

See R. TRESCH, supra note 1, at 14. Of course, theoretical partial equilibrium analysis may be useful as a classroom or textbook device to build up understanding. See R. BOADWAY and D. WILDASIN, supra note 53 at 287, 322. But this is a different task from that of evaluating tax policy in a sophisticated way.

56. The best model is not always the one that considers the most price changes or that has the most equations. But it is inappropriate given 1985 modeling technology to analyze the "fairness" of taxes such as the CFIT and the traditional income tax that almost certainly have significant and complex general equilibrium effects by ignoring most of these effects.

1. The General Equilibrium Impact of Taxes on Pre-tax Interest Rates

Professors Kaplow and Warren point out that some distortions may occur independent of any general equilibrium impact of taxes on pre-tax interest rates. They specifically mention the distortions that may arise from maintaining different tax treatments for different investments.

It is hard to see what position of mine they are criticizing here. I do not assert that the impact of tax policy on pre-tax interest rates is the only general equilibrium effect that policymakers should consider. To the contrary, my claim is that there are many general equilibrium effects that may be relevant, and it is best to take as many of them into account as possible.[57] The change in pre-tax interest rates is simply used as a clear example of a general equilibrium effect for purposes of exposition in my original article. In fact, in one discussion I describe that effect along with some others as "only a small portion of the relevant general-equilibrium effects."[58]

In addition, the differential taxation of income from different types of investment is one of the situations where economists have put the most effort into using sophisticated general equilibrium analysis. Indeed, some of the earliest applications of the most advanced models have focused on this situation.[59] This is not surprising as different industries face

57. See Strnad, supra note 9, at 1035-36, 1104-1106.

58. See Strnad, supra note 9, at 1058.

59. See e.g., Shoven and Whalley, A General Equilibrium Calculation of the Effects of Differential Taxation of Income from Capital in the U.S., 1 J. PUB. ECON. 281, 281-83 (1972).

different production and demand conditions so that complex analysis is required to sort out the magnitude and direction of the overall effects of a tax system that treats different investments differently. Otherwise, there can be little confidence about the magnitude or even the direction of the distortions.[60]

Furthermore, despite the assertion to the contrary by Professors Kaplow and Warren, effects due to interest rate changes can in theory undermine the conclusion that differential tax rules distort investment decisions. Investments differ in their time streams of costs and revenues. A strip mining operation may involve revenues at the start of the operation and then heavy costs over several years associated with reconstructing the land that was mined. Such an operation will appear more valuable if after-tax interest rates are higher. Meanwhile, projects that have all costs up front and revenues in the years following will experience the opposite effect from higher after-tax interest rates. In theory, taxing investments differently might offset the differential effect on the investments of the economy-wide change in after-tax interest rates due to the entire tax system.

2. The Nonequivalence of the CFIT and Yield Exemption

Professors Kaplow and Warren purport to rescue the conventional defense of the principle that the CFIT is equivalent to yield exemption from my critique of it by adding government financial transactions to the defense. Ironically, this only creates a model that is ideal both for illustrating my critique and for demonstrating the points about the non-equivalence of the two

60. See Shoven and Whalley, supra note 59.

tax treatments that I derived in a non-general-equilibrium setting in my original article.

In the example used by Professors Kaplow and Warren the prevailing pre-tax interest rate is 10%. The government adds a CFIT at 50% rates to the prevailing labor income tax at 50%. The investor holds an investment that costs 100 at time 0 and yields 110 at time 1. Under the CFIT, the after-tax cost and yields are cut in half: The cost is 50 and the investor receives 55 at time 1. At the same time the government gives up 50 in taxes at time 0 in order to gain 55 in tax revenues at time 1. It is as if the government purchased one-half of the original investment at the investor's cost. Note that the net present value of the government's revenues for this transaction at time 0 is 0 when evaluated at the private after-tax discount rate of 10%: The time 0 present value of the 55 in tax revenues at time 1 is 50, exactly equal to the revenues forgone at time 0.

Private investment has been cut in half. In order to explain how the demand for additional investment is satisfied without decreasing the market rate of return, Professors Kaplow and Warren assume that the government issues bonds at the market rate of 10%. Thus, the investor above buys a bond that will yield 110 at time 1, and that bond costs 100 at time 0. Since the investor can deduct that 100 cost at time 0 and is taxed on the 110 at time 1, this bond has exactly the same after-tax consequences as the original investment. Holding both together replicates yield exemption: The investor bears an after-tax cost of 100 at time 0 to gain 110 at time 1. No additional real investment is necessary so that neither

a decline in the marginal productivity of capital nor a change in the market rate of return need be of concern. The bond also cancels out the tax revenue timing consequences of the CFIT for the government since the government gains 50 (after considering the impact of the bondholder's deduction) upon issuing the bond and must pay 55 (net of additional taxes collected from the bondholder) at time 1. Furthermore, this government transaction has a net present value of 0 when evaluated at the private after-tax discount rate of 10%.

The non-general-equilibrium analysis in my original article indicates that yield exemption and the CFIT are equivalent for breakeven transactions: The government simply "buys" part of the investment at its market value, and the investor can use the sale proceeds to buy another investment that yields the market rate of return (which is the same before and after tax under the CFIT).[61] Adding in borrowing at the market rate by the government means that no additional physical investment need be made in order to put investors in the same position they were in under yield exemption.

But my original article also indicated that the CFIT and yield exemption are not equivalent for "profitable" transactions, those that earn greater than the market rate of return. These investments are of particular interest under tax base theory since they involve an increase in net wealth at the time the investment is made. Suppose that in the example above there is another investor who invests at 100 and earns 121 instead of 110 at time 1. This investment creates an instantaneous increase in wealth at

61. See Strnad, supra note 9, at 1069-1072, 1078.

time 0 of 10 before considering taxes.[62] Then under the CFIT at a 50% rate the government seizes one-half of this profit by forcing the investor to "sell" half the investment to the government at the investor's cost. The government pays 50 in lost revenues at time 0 to gain 60.5 in revenues at time 1. These tax revenue effects have a net present value of 5 for the government, leaving the investor with only one-half of the before-tax gain of 10. Under yield exemption, the investor keeps the entire gain of 10, and the net present value of government revenues is zero.

It will not help for the government to issue bonds at the market rate in this case. Those bonds will not substitute in the investor's hands for the loss of half of the profitable transaction. The government could issue a special bond to the particular investor where the bond costs 100 and yields 121, and this would cancel out the tax effects.[63] But it would also reduce the net present value of government revenues from 5 to 0. Issuing the bond has a net present value of -5 for the government: It gains 50 at time 0 (after considering the effect of the investor's deduction of the 100 cost of the bond) and gives up 60.5 at time 1

62. See text accompanying notes 10-15 supra.

63. By issuing the bond, the government would allow the investor to gain 60.5 at time 1 after-tax for only 50 after-tax at time 0 although the market value of the right to have 60.5 after-tax at time 1 would be 55 since 55 x 1.1 = 60.5. This exactly cancels out the fact that under the CFIT the government forced the investor to sell the right to 60.5 after-tax for only 50.

The government could not issue the bond to the public in general. The bond earns above the market rate of return, and whoever purchased it at 100 would have an instantaneous gain of 5 after tax. But that gain must be given to the investor to put him in a position equivalent to yield exemption.

(net of taxes received from the investor). The only way out of this dilemma is if there is an additional physical capital investment available in the economy that costs 100 and yields 121. Then there is no need for the government to issue a special bond. The investor can simply double his physical capital investment. But this runs into precisely the declining marginal productivity of capital (and declining rate of return) possibilities that I raised in my original article. These possibilities make the usual equivalence story extremely suspect as a general-equilibrium argument.[64]

In summary, the CFIT is a tax on pure profits, and government revenues have net present value at the time of each investment to the extent there are pure profits. Under yield exemption, the government does not tax pure profits and gives up the associated gain in net present value. The government cannot change that result by engaging in transactions that have zero net present value such as borrowing at the market rate of interest.[65]

64. See Strnad, supra note 9, at 1036-1037.

Note that the same problems arise if the government issues the special bond and then seeks out additional profitable physical investment on its own in order to offset the loss from issuing the bond.

65. Professors Kaplow and Warren acknowledge that

> ...cash flow taxation and exemption of capital income may have implications for ... the Treasury's ability to share in any difference between the rate of return in the private sector and the rate of interest on government debt....

Reply, supra note 4, at 419 n. 81. What I have shown here is that one of the implications is that the government cannot make the CFIT and yield exemption equivalent by engaging in borrowing that has zero net present value if the present value of government revenues is assessed at the private discount rate.

III. Conclusions

The Haig-Simons ideal is an important normative concept. But using it requires that one specify a method of measuring the value of changes in wealth. I use market value and present value, the concepts of value employed in modern finance theory. Professors Kaplow and Warren disagree with a result that I show follows from those concepts of value: That the CFIT implements the Haig-Simons ideal in a non-general-equilibrium setting. But their critique is ineffective because they do not present an alternative concept of value and give reasons for using it in the definition of the Haig-Simons ideal instead of market value or present value. It is questionable whether such an alternative concept can be constructed that is also consistent with the idea of value contained in modern finance theory.

Professors Kaplow and Warren generally agree with my position that it is important to take general equilibrium effects into account in assessing alternative tax policies. But their attempt to make a general equilibrium argument for the equivalence of the CFIT and yield exemption fails. In fact, using their approach reinforces the conclusion in my original article that the equivalence holds in a non-general-equilibrium setting only for breakeven transactions.

Appendix: Present Value, Market Value and After-Tax Sales Value

In applying the Haig-Simons definition of income there are two places where it is important to specify the concept of "value" that is being applied. First, there must be a "benchmark" value of the change in net wealth against which to compare the results of a tax. In my original paper I use net present value at time 0 and changes in present value after time 0 in the no tax world as benchmarks. Second, there must be a measure of the increase in value experienced after-tax to compare against the benchmark. In my original article, I use net present value at time 0 and present value after time 0 in the tax world as the concepts of value for that purpose. The justification for this is that present value represents the after-tax amount that the owner would have to pay to obtain a similar after-tax return in the marketplace.[66] This concept of value is particularly appropriate when the owner of an investment or borrowing opportunity never sells it.

There are other concepts of value, however. First, as an alternative benchmark for applying the Haig-Simons doctrine there is what is commonly thought of as "market value." This is the pre-tax amount that the investment would sell for in the tax world or, if market value in the no tax world is of concern, the amount that the investment would sell for in the no tax world. Second, for measuring the investor's after-tax change in value one can use "after-tax sales value." This is the amount that the owner would realize after tax if the investment were sold. This amount is affected by the tax treatment of the <u>buyer</u> as well as that of the

66. <u>See</u> Strnad, <u>supra</u> note 9, at 1044-45, 1056-57.

seller since the buyer's tax treatment will affect the pre-tax amount that the buyer will be willing to pay for the investment. This Appendix shows that the main results of my original article do not change if these alternative concepts of value are used instead of net present value or present value.[67]

In order to use concepts of "market value," it is necessary to model a market for investments.[68] I construct a simple model here that is consistent with the model set up in my original article. General equilibrium price changes will be ignored, and a tax rate that is common to all taxpayers is assumed to be constant over time. The market for investments is assumed to be perfectly competitive so that investments will sell at a price that makes them a zero net present value transaction to the buyer at the prevailing after-tax market rate of return. For simplicity (and without affecting the results), I model only riskless investments.

The conclusions in this Appendix are stated in several propositions that are established using the riskless version of the

67. This Appendix is similar to part of the earliest working paper version of my original article. See Strnad, "Taxation of Income from Capital: A Theoretical Reappraisal," California Institute of Technology Social Science Working Paper No. 526, February 1984 version, Appendix H. I chose to omit this part from the already lengthy published version for two reasons. First, the equivalence of various market value concepts and net present value or present value is fairly obvious for the CFIT in a non-general-equilibrium setting. Second, the results concerning the traditional income tax are not affected significantly by considering market value concepts that diverge from net present value or present value.

68. I limit consideration to investment transactions. The results for borrowing transactions would be similar because, as discussed in my original article, essentially these are the "negative" of some investment transaction. See Strnad, supra note 9, at 1041, 1045-46, 1049, 1052, 1062.

paradigmatic investment transaction in my original article. This involves the owner expending X at time 0 to receive revenues of Y for certain at time 1. A deduction of the proportion D of this cost is allowed at time 0 and the remaining proportion (1 - D) of the cost is deducted at time 1. When D = 1, the CFIT is the tax treatment since the deductions exactly match the cash flow of the payment of X.

I. Statement and Discussion of the Propositions

Before stating the propositions, it is important to note that present value and market value are equivalent in the no tax world given the assumption of perfectly competitive markets for investments. This is because the buyer and seller evaluate exactly the same cost and revenue streams using the same discount rates.[69] As a result of this equivalence, the only no tax world benchmark that I will refer to is market value.

The first two propositions concern the CFIT in a non-general-equilibrium setting:

> Proposition 1 Market value in the no tax world and market value in the tax world with a CFIT are identical.
>
> Proposition 2 At time 0 in a world with a CFIT, after-tax net present value is equal to after-tax profit on sale. In the same world at times after time 0, after-tax present value is equal to after-tax sales value.

These two propositions imply that the results in a non-general-equilibrium setting for the CFIT will not be affected by using any of no tax world market value, tax world market value, pre-tax present value in the tax world or no tax world present

69. See Strnad, supra note 9, at 1044-45, 1064 (making the point algebraically at time 0).

value as a baseline.[70] Furthermore, using after-tax sales value instead of net present value or present value as the outcome to be measured against the baseline does not change the results.

I define "traditional income tax" to mean a tax where the proportions D and (1 - D) of time 0 cost deducted at times 0 and 1 respectively are set to replicate economic depreciation in present value and $D \neq 1$.[71] However, all the propositions below that are stated as applying to the traditional income tax hold whenever $D \neq 1$ regardless of whether the particular D replicates economic depreciation.

For the traditional income tax in a non-general-equilibrium setting the results depend to some extent on the relation between discount rates in the no tax world and the tax world. In particular, there are some special results when what I called the "second view" in my original article applies. At time 0, this view means that $r^t = (1 - T)r/(1 - DT)$ where r is the riskless rate in the no tax world and r^t is the after-tax riskless rate in the tax world. After time 0, this view requires that $r^t(t) = (1 - T)r(t)/(1 - DT)$ where r(t) is the riskless rate for the period from time t to time 1 in the no tax world and $r^t(t)$ is the

70. In a non-general-equilibrium setting, the discount rate does not change from the no tax world to the CFIT world. The flows of costs and revenues also do not change. As a result, the pre-tax present value of an investment in the CFIT world will be the same as the present value in the no tax world. Present value in the no tax world is in turn identical to no tax world market value. Given these equivalences, it follows from Proposition 1 that market value in the CFIT world is identical to each of the three other measures of value.

71. See Strnad, supra note 9, at 1047-48 (explaining how economic depreciation is set in the simple discrete time model used here).

corresponding after-tax rate in the tax world. The second view can only hold for one value of D since there is only one riskless rate in each world. As discussed in my original article,[72] this view forces breakeven transactions treated for tax purposes with that value of D to conform to the Haig-Simons ideal.

There are two propositions for the traditional income tax that are similar to Propositions 1 and 2.

> Proposition 3 Changes in market value in a world with a traditional income tax will be equal to corresponding changes in market value in the no tax world only when the second view applies.

> Proposition 4 At time 0 in a world with a traditional income tax, net present value is not equal to after-tax sales value. In the same world at times after time 0, after-tax present value generally is not equal to after-tax sales value.

Consider the following table:

Table 4

benchmark	measure of change in after-tax wealth
(1) change in no tax world market value	(A) change in present value (at time 0: net present value)
(2) change in tax world market value	(B) change in after-tax sales value (at time 0: after-tax gain if sold)

Propositions 3 and 4 indicate that (1) and (2) must be treated as distinct cases and that (A) and (B) must treated as distinct cases.

My original article analyzes whether the Haig-Simons ideal is met when (A) is compared to (1). Propositions 5 - 7 state the results for (A) versus (2), (B) versus (1) and (B) versus (2) respectively:

72. See, Strnad, supra note 9, at 1079.

Proposition 5 The traditional income tax does not meet the Haig-Simons ideal expressed in terms of comparing net present value at time 0 or changes in present value after time 0 to changes in tax world market value.

Proposition 6 Unless the second view applies, the traditional income tax does not meet the Haig-Simons ideal expressed in terms of comparing after-tax profit if sold at time 0 or changes in after-tax sales value after time 0 to changes in no tax world market value.

Proposition 7 The traditional income tax meets the Haig-Simons ideal expressed in terms of comparing after-tax profit if sold at time 0 to changes in tax world market value at that time. For times after time 0, the traditional income tax meets the Haig-Simons ideal expressed in terms of comparing changes in after-tax sales value to changes in tax world market value.

II. Derivation of the Propositions

Consider the riskless version of the paradigmatic investment transaction in my original article. This involves the owner expending X at time 0 to receive revenues of Y for certain at time 1. Suppose that at time 0 the investment has a market value of $X + P^t(0)$ so that $P^t(0)$ is the premium above the cost, X, to the owner. In a competitive market, purchase of this investment from the owner will be a transaction with zero net present value. If the buyer can deduct the portion D of the cost at time 0 and the remaining proportion (1 - D) at time 1, then for purchase to have a net present value of zero at time 0 it must be true that:

$$-(1 - DT)[X + P^t(0)] + \frac{(1 - D)T[X + P^t(0)]}{1 + r^t} + \frac{Y(1 - T)}{1 + r^t} = 0 \qquad (A1)$$

But since $NPV^t(0) = -(1 - DT)X + [Y(1 - T) + (1 - D)TX]/(1 + r^t)$, (A1) implies

$$-(1 - DT)P^t(0) + \frac{(1 - D)TP^t(0)}{1 + r^t} + NPV^t(0) = 0 \qquad (A2)$$

Solving for $P^t(0)$ and multiplying it by (1 - T) yields:

$$(1 - T)P^t(0) = NPV^t(0)\ (1 - \frac{(1 - D)Tr^t}{(1 - T) + (1 - DT)r^t}) \qquad (A3)$$

This equation indicates that under the CFIT (D = 1) net present

value is equal to after-tax profit from sale. This establishes Proposition 2 at time 0. Whenever $D \neq 1$, net present value will not equal after-tax sales value.[73] This establishes Proposition 4 at time 0. In addition, even under the second special view a change in $P^t(0)$ will not result in the "Haig-Simons response" of $NPV^t(0)$ changing by $(1 - T)P^t(0)$. This establishes Proposition 5 at time 0. Finally, note that regardless of the value of D, the after-tax profit from sale at time 0 would be $(1 - T)P^t(0)$, exactly (1 - T) times the change in tax world market value of $P^t(0)$. This establishes Proposition 7 at time 0.

Equation (27) in my original article specifies the relation between $NPV^t(0)$ and NPV(0) given that $r^t = (rho)r$ is the relation between r^t, the after-tax riskless rate in the tax world, and r, the riskless rate in the no tax world:

$$NPV^t(0) = (1 - T)NPV(0) - (1 - D)TX\frac{(rho)r}{1 + (rho)r} + \frac{Y(1 - T)r(1 - (rho))}{(1 + (rho)r)(1 + r)} \qquad (27)$$

Substituting this expression for $NPV^t(0)$ into (A3) and simplifying yields:

$$(1 - T)P^t(0) = \frac{(1 + r)(1 - T)^2}{(1 - T) + (1 - DT)(rho)r} NPV(0) + \frac{(1 - T)Xr[(1 - T) - (1 - DT)(rho)]}{(1 - T) + (1 - DT)(rho)r} \qquad (A4)$$

For the CFIT D = 1, and (rho) = 1 when the CFIT applies in a non-general-equilibrium setting. But then (A4) implies that $P^t(0)$

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73. Furthermore, when D < 1, net present value exceeds after-tax sales value and the owner is better off keeping the investment rather than selling it. There is a kind of "lock-in" effect. Thus, if the traditional income tax involves any cost recovery treatment that is less lenient than the CFIT, net present value is arguably a more accurate indicator of the change in net wealth than after-tax sales value since the owner is likely to keep the asset.

= NPV(0). Thus, the no tax world market value, X + NPV(0), is equal to the tax world market value, X + $P^t(0)$. This establishes Proposition 1 at time 0. When $D \neq 1$, then (rho) = (1 - T)/(1 - DT) is required for $P^t(0)$, the change in tax world market value, to be equal to NPV(0), the change in no tax world market value. This establishes Proposition 3 at time 0. Furthermore, it will only be true that (1 - T)$P^t(0)$ = (1 - T)NPV(0) under the second view. Therefore, (T)$P^t(0)$, the tax on gain if sold at time 0, will represent a Haig-Simons tax on NPV(0) only when the second view applies. This establishes Proposition 6 at time 0.

Now consider times after time 0. The cost X is sunk and the right to the investment is a right to collect time 1 revenues. At time t where t > 0, the seller would realize the after-tax amount

$$\begin{aligned} R(t) &= (1 - T)[V^t(t) - X(1 - D)] + X(1 - D) \\ &= (1 - T)V^t(t) + TX(1 - D) \end{aligned} \tag{A5}$$

where $V^t(t)$ is the market value of the investment in the tax world at some time t following time 0. Here the seller recovers X(1 - D) tax free on sale since this is the undeducted portion of the cost at time 0. For the transaction to have zero net present value for the buyer it must be true that:

$$\frac{Y(1 - T)}{1 + r^t(t)} - (1 - DT)V^t(t) + \frac{(1 - D)TV^t(t)}{1 + r^t(t)} = 0 \tag{A6}$$

By equation (47) in my original article, the after-tax present value of the investment at time t is:

$$PV^t(t) = \frac{Y(1 - T)}{1 + r^t(t)} + \frac{(1 - D)TX}{1 + r^t(t)} \tag{47}$$

From (47) and (A6) it follows that:

$$V^t(t) = PV^t(t)\frac{(1 + r^t(t))}{(1 - T) + (1 - DT)r^t(t)} - \frac{XT(1 - D)}{(1 - T) + (1 - DT)r^t(t)} \tag{A7}$$

In order for the traditional income tax to meet the Haig-Simons ideal

expressed in terms of comparing changes in present value after time 0 to changes in tax world market value, it must be true that $PV^t(t)$ = (1 - T)$V^t(t)$ plus a constant independent of time. In that case, changes in the tax world market value, $V^t(t)$, result in a "Haig-Simons response" of (1 - T)$V^t(t)$ in $PV^t(t)$. But it is clear from equation (A7) that this will not be true even under the second view. This establishes Proposition 5 for times after time 0.

Substituting the expression for $V^t(t)$ from (A7) into (A5) yields:

$$R(t) = PV^t(t)\frac{(1 - T)(1 + r^t(t))}{(1 - T) + (1 - DT)r^t(t)} + \frac{XT(1 - D)(1 - DT)r^t(t)}{(1 - T) + (1 - DT)r^t(t)} \tag{A8}$$

Under the CFIT D = 1 and by equation (A8) R(t) = $PV^t(t)$. In other words, after-tax sales value equals after-tax present value. This establishes Proposition 2 for times after time 0. But when $D \neq 1$ then after-tax sales value will not generally be equal to after-tax present value. This establishes Proposition 4 for times after time 0.

Using equations (47) and (49) from my original article yields the following relation between $PV^t(t)$ and PV(t), the no tax world present value of the investment at time t:

$$PV^t(t) = \frac{(1 - T)(1 + r(t))}{1 + (\text{rho})r(t)}PV(t) + \frac{(1 - D)TX}{1 + (\text{rho})r(t)} \tag{A9}$$

Rearranging (A7) to express $PV^t(t)$ in terms of $V^t(t)$ using $r^t(t)$ = (rho)r(t) results in:

$$PV^t(t) = \frac{(1 - D)TX}{1 + (\text{rho})r(t)} + V^t(t)\frac{(1 - T) + (1 - DT)(\text{rho})r(t)}{1 + (\text{rho})r(t)} \tag{A10}$$

Now from (A9) and (A10) it follows that the relation between $V^t(t)$ and PV(t) is:

$$V^t(t) = \frac{(1 - T)(1 + r(t))}{(1 - T) + (1 - DT)(\text{rho})r(t)}PV(t) \tag{A11}$$

For the CFIT D = 1, and (rho) = 1 when the CFIT applies in a non-general-equilibrium setting. But then (A11) implies that $V^t(t) = PV(t)$. Thus, the no tax world market value, PV(t), is equal to the tax world market value, $V^t(t)$. This establishes Proposition 1 for times after time 0. When $D \neq 1$, then (rho) = (1 - T)/(1 - DT) is required for $PV(t) = V^t(t)$ to be true so that changes in PV(t) are equal to changes in $V^t(t)$. This establishes Proposition 3 for times after time 0.

It remains to show that Propositions 6 and 7 are true for times after time 0. Substituting the expression for $PV^t(t)$ from (A9) into (A8) and noting that $r^t(t) = (rho)r(t)$ results in:

$$R(t) = \frac{(1 - T)^2(1 + r(t))}{(1 - T) + (1 - DT)(rho)r(t)}PV(t) + (1 - D)TX \qquad (A12)$$

When $D \neq 1$, then (rho) = (1 - T)/(1 - DT) is required for R(t) = (1 - T)PV(t) + (a constant) to be true. Thus, after-tax sales value will respond in a Haig-Simons manner to changes in the no tax world market value only when the second view applies. This establishes Proposition 6 for times after time 0.

From (A8) and (A10) it follows that:

$$R(t) = (1 - T)V^t(t) + (1 - D)TX \qquad (A13)$$

Regardless of the value of D, any change in $V^t(t)$ will result in a change exactly (1 - T) as large in R(t). As a result, for times after time 0, the traditional income tax meets the Haig-Simons ideal expressed in terms of comparing changes in after-tax sales value to changes in tax world market value. This establishes Proposition 7 for times after time 0.