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Taxation and Valuation.

I used some insights from computer theory to analyze the failure of persistent efforts at US tax reform despite the strong and sustained public interest. In “The Equity Tax and Shelter” (Tax Notes, 93 (9), [http://www.cs.bu.edu/fac/lnd/civic/eqtx.htm](http://www.cs.bu.edu/fac/lnd/civic/eqtx.htm)) I discussed a fundamental difficulty not yet well understood in the economic literature. I pointed out somewhat unusual ways around it for the case of publicly traded corporations (PTC) and their investors.

Taxes have major costs beyond the revenues they collect: deadweight from distorted incentives, costs of compliance, enforcement costs, etc. (The report of the 2005 President’s Advisory Panel on Federal Tax Reform mentions a trillion dollar annual waste.) Many proposals aimed to alleviate these effects but invariably introduced greater distortions than those they claimed to remove. Here is my observation:

Modern economics, based on classical game theory, assumes rational maximization of some consistent, legally definable values such as assets or income. This, however, fails to recognize the intractability of consistent valuations and other types of rational behavior in many games (much more so in real life).\(^1\)

For instance, in playing chess the first idea coming to mind is to understand how to compute the positions’ value, and to choose each move to maximize it. The value must be consistent across a move, i.e., agree with the best value of the next position one move can achieve. Indeed, each position does have such a consistent \(\{±1, 0\}\) value: one side has a winning strategy or both have a draw. Just keep moving to positions of the same value. What a silly way to pass the time!

It is the well known exponential intractability of this strategy that saves the fun! I argue that any legal definition of the tax base value will be inconsistent with taxpayers’ motives and thus distortive. (Taxing any feasible defined gain in chess positions would change the game entirely.) I discuss unusual but, I think, neat, sound, and practical ways around it.\(^2\)

I see the culprit not in taxation itself, but in the official valuation of the tax base it usually involves. If taxes are expressed in natural units (e.g., corporate shares), not in cash, the distortion could be avoided.

\(^1\)Economists do now recognize, besides grain, land, coal, the relevance of another commodity: information. I doubt all fully realize how subtle this concept is, but even a cursory attention to it has brought progress. Yet, one more factor – intelligence – needs acknowledging. Even with full and perfect information the IRS couldn’t match all taxpayers in intelligence, and thus in ability to evaluate their assets. Lacking such ability, it acts like an elephant in a china shop, vandalizing our economic life.

\(^2\)Compounded interest rate \(i_{a,b}\) for a time period \([a, b]\) must be used instead of the simple interest \(s_{a,b}\) if \(s^2\) is not negligible. Its retained complement \(r_{a,b} = 1 - i_{a,b}\) is \(e^{-s_{a,b}} = r_b/r_a\), where \(r_a = r_0, a\) for a fixed starting date 0. If only a fraction \(t\) of the interest is charged, \(r_a\) is replaced by its power \((r_a)^t\). The IRS or Treasury can keep daily tables \(r_a\) and \((r_a)^t\) online.

1.1 A Corporate Tax Code on a Postcard.

Let \(\bar{i}\) be the effective tax rate, \(\bar{i}\) = market-clearing adjustable at-will interest rate* of redeemable at-will (for inflation-adjusted purchase price) T-bonds.

At regular dates (also on in-dividend dates), PTCs give the IRS a \(t \cdot i\) fraction of all outstanding shares to auction. (They buy back shares for this purpose or issue more.) To avoid double-taxation, PTCs shield firms they own shares of (even if via private intermediaries): the respective parts of those firms’ taxes go to their PTC owners, not to the IRS.

Going public turns the cost basis of the prior shares income-tax-deductible. Instead, a “conversion tax” is paid – giving the IRS options to buy a fraction \(t\) of the outstanding shares at strike price totaling to all taxes to date on corporate income and distributed dividends. A similar “strike price credit” can be subsequently used for any taxes e.g., by foreign jurisdictions under US treaties.

(Reconverting to private, a company can establish its shares’ cost basis \(b\) by giving the IRS put options for a fraction \(t\) of its shares at strike price \(b\)).

Bond-like securities with no voting rights can be taxed similarly if they are tradable in fractions. But a simpler equivalent tax is charging their proceeds the interest \(t \cdot i\), compounded for the time the security was held outside the PTC sector.

This code replaces corporate income tax on PTCs, their subsidiaries, and all taxes on their shareholders’ dividends and capital gains. It distorts no incentives: boosting post- and pre-tax values is exactly the same. Its enforcement and compliance costs are minimal. It requires no complicated regulations, except unrelated to taxes, say, those protecting minority shareholders. The impossibility of hiding or delaying liability lowers tax rates. A steady trickle of auctioned shares may even have some stabilizing effect on the stock market.

This Equity Tax (ET) is close to \(t\)-rate tax on total return.\(^3\) If \(i\) exceeds stocks return rate, investors would sell shares and buy bonds. If \(i\) is significantly lower, the Treasury can raise this (variable) \(i\), not fearing excessive demand (it must meet) for bonds.

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\(^3\)which cannot be taxed in cash based on stock prices, lest firms manipulate them, seriously challenging market integrity.
1.2 Appendix: Additional comments.

The match with tax on total return is clearer via ET’s equivalent but slightly more cumbersome variant: v-ET. It differs from ET like IRA from Ross IRA: all investments (from private sector) are income-tax-deductible and divestments are income-taxed (both at rate $t$). Then the entire stock market capitalization $C$ would be untaxed income, the deferred tax $t \cdot C$ on it – an enormous loan from the Treasury. To finance it the Treasury can sell bonds and pay interest $i \cdot t \cdot C$ on them, compensated by v-ET (proceeds from the $i \cdot t$ flow of auctioned shares). Similarly, any company can spend this loan (deferred tax) on bonds, the interests on which would compensate its v-ET.

Inflation distorts the total return (the change in value minus investment plus divestment). So we must use "constant dollar" units to express "real" values and interest rates. Such units are based on prices of a "standard basket" – a weighted package of representative goods. These goods should be cheap to store, which keeps the "real" interest rates positive (or $\approx 0$).

Our bonds have a market-clearing interest rate $i$. This means the Treasury must absorb all differences between supply and demand of such bonds by buying bonds back (at inflation-adjusted purchase price) or issuing more. This ensures that corporations can have their exact desired bond exposure. But the Treasury can change $i$ at-will (with due notice, so customers can buy or sell bonds before the new rate takes effect) and so alter the supply and demand. Thus, it can keep its desired bond exposure, too. The discussed bond exposure is certainly not optimal. Optimizing it affords any side further advantages over income tax.

Shielding from double taxation can be simplified via Taxed Intermediaries (TI). A TI exists only on paper and holds some shares of a PTC X. It is TI’s, not X’s, shares that are held in the private sector and taxed. Public sector holds shares of X directly. They are transferred to private sector and back via the TI who can exchange its own shares for X’s and back.

The PTC tax rate $t$ is just set by the Law and should agree with the effective private sector rate. This means the net capital flow between the PTC’s and the private sectors should be tax-revenue-neutral.

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2 Just one issue in a broader scope.

The above tools work only for the publicly held sector. This analysis is meant to show that the failure of all persistent tax reform efforts had a cause that, while fundamental, can be circumvented in important cases. My tools cannot add grace to taxes on closely held business or personal earnings. Yet those, too, have aspects that can benefit from reforms. Some have been widely discussed. Just some popular examples:

**Dividends and capital gains** taxes have low rates but apply largely to income already taxed at the corporate level. This is widely criticized. A $t$-rate tax on the untaxed part only, can be more consistent.

Shareholders then would pay no tax on dividends. A company would keep the number $N$ of outstanding shares, the accumulated to date totals (in constant dollars) of taxable income $I$ (including net gain/loss of share buybacks), and of paid dividends $d=D(1-t)$. It is taxed on the growth of $M = \max\{I,D\}$. It posts $v=(M-D)/N$. At share sales, $v(1-t)$ or its part is subtracted from the new cost basis (or added to $I,d$ at buybacks) and from capital gains (taxed at rate $t$).

**Gifts/Estates** also should avoid double taxation. Stock-derived income (fully taxed already) can be excluded. The rest, instead of large standard deduction, can get a tax credit for income taxes the donor paid.

**Taxes on medical expenses** penalize deductibles in medical insurance. Needlessly low deductibles make one careless with expenses which is widely blamed for skyrocketing medical costs. Taxing medical expenses up to the same cut-off level regardless of whether paid by the taxpayers or by their insurance can rectify this harmful tax-induced distortion.

Many other concerns and ideas would, of course, resurface when the tax reform drive heats up again. E.g., taxing housing rent expense depresses population mobility. (As they say, “When a tenant marries the landlord, the national income shrinks.” :-)

My topic of the publicly traded sector is just one of great many. Yet, it is a large one, assuring that at least some significant improvements are achievable.

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4A bit of wishful thinking: The US Constitution requires a fair compensation for private property taken for public use. This seems to imply spending taxes to fairly benefit the taxpayers, e.g., giving them a tax-weighted say in approving public spending levels. Then, they would do a much better job than the Congress in setting the right tax rates.

5The general effect of insurance is diffusion of responsibility. This agrees with the general liberal ideology which has a reason: Since the society absorbs most of the rewards of one’s success, it should also absorb much of the pains of one’s failure. Otherwise people would have a suboptimal risk tolerance.

The conservative counterargument to this seems to be: “While three lefts do make a right, two wrongs do not.” :-).

It seems, general tax policies should be neutral on such issues.