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INCOME TAX DEDUCTIONS FOR LOSSES AS INSURANCE

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Abstract

This note briefly sketches a model of the effect of income tax deductions for losses (such as the casualty loss and medical expense deductions) on individuals' insurance decisions. This model relates to one of the arguments in Working Paper No. 82, which more broadly explores such deductions.

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The federal income tax allows deductions for some categories of loss, as for casualties and medical expenses above a threshold. Deductions like these act as partial insurance: individuals receive a tax benefit equal to their marginal rate multiplied by the magnitude of their loss. This form of insurance is, of course, unnecessary when private insurance is available. Moreover, these deductions have a perverse effect because they are allowed *only for the uninsured portion of losses*. This induces individuals to secure less aggregate protection against risk than if the implicit insurance provided by the tax system were unavailable.[1] And, if the tax rate is sufficiently high, individuals would forgo insurance coverage altogether. A tax system with no deductions for personal losses (and a corresponding adjustment in rates to eliminate any distributional effects) pareto dominates the current system, if it is assumed that individuals make rational insurance decisions in well-functioning insurance markets.[2]

These conclusions are demonstrated in a simple model in which risk-averse individuals may purchase actuarially fair insurance against loss. The case of risks unaffected by individual behavior is examined first, followed by remarks

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* Harvard University and the National Bureau of Economic Research. I am grateful for comments from Steven Shavell and for support from the John M. Olin Foundation. A more complete discussion of tax policy issues relating to the tax code's deduction for medical expenses and casualty losses appears in Kaplow (1991b).

[1] The situation that results is, in some respects, the opposite of that in which there are no offsets for capital losses. See, e.g., Atkinson and Stiglitz (1980), Domar and Musgrave (1944). (One way to see this is that results lower than the expected outcome result in deductions but those above the expected outcome -- i.e., when there is no loss -- do not result in any taxable gain. See Kaplow (1991b).) Note that if deductions were for the total loss, instead of only the uninsured portion, the primary argument here would be inapplicable, but the moral hazard problem discussed below and in Kaplow (1991a) would still apply.

[2] The inefficiency explored here is in addition to the fact that tax deductions for losses may distort behavior directly (because individuals do not bear the full expected loss associated with some activities).

on the case of risks that are influenced by individual behavior (moral hazard).

Suppose that the income tax rate is t, that a loss of ℓ is suffered with probability p, that the uninsured portion of the loss is deductible, that the resulting expected revenue loss is financed by a lump-sum tax, τ, and that (nonnegative) insurance coverage q is available at the actuarially fair premium pq. Thus, if U is the concave utility function for the representative individual and initial (after-tax) wealth is w, individuals choose q, taking t and τ as given, to maximize

$$(1) \quad EU = (1-p)U(w - \tau - pq) + pU(w - \tau - pq - \ell + q + t(\ell - q)).$$

The first-order condition for an interior solution (which, if it exists, is a unique maximum) is

$$(2) \quad \frac{1-p}{1-p-t} = \frac{U'_\ell}{U'_o},$$

where the subscripts ℓ and o indicate utility in the states with and without a loss, respectively.

The following observations are in order. <u>If $t = 0$, individuals choose q so as to equalize marginal utility in the two states -- that is, they fully insure, which is the first-best outcome.</u> This result is the familiar one that, in the absence of moral hazard, complete insurance coverage is optimal. Actuarially fair insurance merely redistributes one's income across states, and with concave utility the optimum involves equal income in all states, as is apparent from (2).

<u>For any $t \in (0,1)$, individuals will not be fully insured in aggregate, and thus welfare will be lower.</u> It is apparent from (2) that, if $t \neq 0$, individuals will not have equal income in both states as they do when $t = 0$.[3]

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[3] If one directly maximizes EU with respect to t, subject to the constraints that the lump-sum tax finances the deduction and that individuals choose q optimally given t, the first-order condition indicates that changes in total welfare correspond to the negative of changes in the aggregate level of loss to which the individual is exposed, $\ell - q - t(\ell - q)$.

(Setting $t = 1$ -- a 100% tax credit -- would be tantamount to full insurance and thus produce equal utility to the regime with $t = 0$.)

It is possible that individuals will purchase no coverage. In particular, for any degree of risk aversion, there will exist a critical value for the marginal tax rate, t^*, such that, if $t \geq t^*$, individuals do not insure. The reason is that increasing insurance coverage entails the cost of forgoing a given amount of free government insurance. The greater is t, the greater the free coverage forgone for any increment of private insurance and the less the benefit from an incremental further reduction in risk. From (2), it can be seen that this critical value is

$$(3) \quad t^* = (1-p)\left(1 - \frac{U_o'}{U_\ell'}\right),$$

where U_o' and U_ℓ' are evaluated at $q = 0$. Thus, for example, if marginal utility is 25% lower in the state without the loss, individuals would purchase no insurance at the current federal income tax top bracket marginal rate of approximately 30%. In summary, because of the availability of automatic partial insurance coverage through the tax system, individuals are led to expose themselves to some or all of the risk of the loss, which they otherwise would have chosen to insure fully.

Consider now how the ability of individuals to influence risk (moral hazard) affects the result. Assume that individuals make an expenditure, x, to reduce the probability of the loss, $p(x)$. If this expenditure were observable by insurance companies (so premiums could be set accordingly), the tax deduction would be even more inefficient, as incentives for care as well as those concerning insurance coverage would be distorted. That is, if $t = 0$, individuals fully insure and there is no moral hazard problem. If $t > 0$, individuals are not fully protected against losses *and* expenditures to reduce the probability of loss are inefficiently low.

If, instead, x were unobservable by insurers, private insurance would be subject to moral hazard as well. If $t = 0$, individuals would partially rather than fully insure. See Shavell (1979). In this case, in addition to the effect noted previously, there are effects of the deduction of losses that

tend to increase total coverage. Most directly, if the tax rate exceeds the percentage of coverage individuals would otherwise have purchased, aggregate coverage would necessarily be greater. Also, even if the marginal tax rate is below the level of coverage individuals would purchase in a no deduction regime, there is a sort of externality due to moral hazard that may induce individuals to purchase greater coverage: increasing coverage increases moral hazard, which increases the actual cost of both private insurance and the tax system's insurance; insurance premiums would rise to reflect the former cost, but individuals take the lump-sum tax as given and thus ignore the added cost to the government. See Kaplow (1991a).

Even if the latter tendencies result in greater aggregate protection against losses, however, the result is necessarily inefficient: the greater level of coverage could have been purchased in the regime with $t = 0$, but was rejected in favor of less coverage. The greater coverage was rejected because the incentive cost (moral hazard) exceeded the benefits of the reduction in risk-bearing costs. The tax deduction does not eliminate any of this incentive cost; it merely removes its consideration from individuals' decisionmaking.

The above arguments assumed that the only market failure in the insurance market involved moral hazard. In fact, this often might be the major imperfection with regard to medical insurance and many forms of casualty insurance (e.g., fire insurance on one's home). Other problems may exist as well. For example, if individuals misperceive risks and underinsure, some government provision may be appropriate, but a deduction for losses may not be a sensible response. For all those who do not substantially misperceive risks, insurance decisions are distorted -- quite possibly in the direction of purchasing too little insurance. Also, the tax system offers more coverage the higher one's income, which would be inappropriate if risk aversion is thought to decline with income.

References

Atkinson, Anthony B., and Joseph E. Stiglitz, 1980, Lectures on Public Economics (McGraw-Hill, New York).

Domar, Evsey D., and Richard A. Musgrave, 1944, Proportional Income Taxation and Risk-Taking, Quarterly Journal of Economics 58, 388-422.

Kaplow, Louis, 1991a, Incentives and Government Relief for Risk, Journal of Risk and Uncertainty (forthcoming).

Kaplow, Louis, 1991b, The Income Tax as Insurance: The Casualty Loss and Medical Expense Loss Deductions and the Exclusion of Medical Insurance Premiums, Harvard Law School Program in Law and Economics Discussion Paper No. 82.

Shavell, Steven, 1979, On Moral Hazard and Insurance, Quarterly Journal of Economics 93, 541-562.