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The Welfare Loss from a Capital Income Tax

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Introduction

In most countries, the pecuniary return from holding financial assets is taxed because capital income is included in the income tax base. A capital income tax reduces the after-tax rate of return on saving, making future consumption costlier than consuming today. That is, it distorts consumer choice along the "intertemporal" margin. Several studies have investigated the impact of capital income taxation on household saving decisions and evaluated the consequent welfare loss (for example, Levhari and Sheshinski [1972], Feldstein [1978], Chamley [1981], Auerbach, Kotlikoff, and Skinner [1983], and Auerbach [1989]).

However, it is also true that the service flow from holding durable goods like cars, houses, or boats is usually not included in the income tax base, partly because such income is hard to impute. An often underappreciated fact is that with a capital income tax, excluding the imputed value of durable goods' service flows from the tax base produces a second, "static" distortion of consumer choice, namely, that between consuming durable and nondurable goods *within* a period. This distortion occurs because the lower after-tax rate of return reduces the rental cost of holding durable goods. Then, if there is no tax on the service flow from such goods, they gain a relative price advantage over nondurables, causing the distortion. Harberger (1966) and Shoven (1976) focus exclusively on the static excess burden due to resource reallocations in production arising from sector-level differences in capital income taxation. The literature seems to lack comparisons of the static and intertemporal distortions in consumption that arise from a capital income tax.

A number of studies recommend eliminating the capital income tax in order to avoid the welfare loss it causes. Some tax reform plans that call for a shift to a flat tax on wages share this motivation. However, these proposals have been criticized for their probable impact on equity. If they are deemed undesirable because of equity or other considerations, it may nevertheless be possible and desirable to devise tax policies for reducing or eliminating the static component of the welfare loss. Hence, understanding the absolute and relative magnitudes of the two components of welfare loss resulting from capital income taxation is important for

setting tax policy: If the static welfare loss is large, a case could be made for taxing durable-goods purchases in order to minimize the total welfare loss from capital income taxation.

To measure the magnitudes of the excess burdens attributable to static and intertemporal distortions, this study uses a representative-agent, life-cycle model of consumption.[1] The agent's preferences are represented by a time-separable utility function with constant elasticity of substitution (CES) in one durable and one nondurable good.

To evaluate the total excess burden and its two components, we use several compensated tax and subsidy experiments. In each of them, we compare the agent's welfare under the no-tax case to that under a compensated tax (or subsidy), where tax (subsidy) revenues are fully rebated (charged) to the consumer in a nondistortionary (lump-sum) manner. Such a rebate of tax revenues is necessary to maintain the agent's budget constraint at the same level as under the no-tax case. Then, with a tax, the agent's consumption choices differ from the no-tax case only because relative prices of durables and nondurables today and in the future are different, not because the consumer's overall budget has changed. To calculate the size of the welfare loss in each case, we measure the percentage reduction in the agent's lifetime budget under the no-tax case that is necessary to generate the same loss of utility as under a compensated tax or subsidy.[2]

The remainder of the paper is organized as follows: Section I describes a life-cycle model of consumption with one durable and one nondurable good. Sections II, III, and IV present the formulations for three different compensated tax schemes used to decompose the total excess burden into its static and intertemporal components. Section V uses results from the previous three sections to show that, under the CES utility specification, the sum of the static and intertemporal components of excess burden closely approximates the total excess burden. Section VI discusses the magnitudes of the excess burdens obtained for the three compensated tax schemes from computations based on a 60-period time horizon, and also examines the sensitivity of the excess burdens to changes in various parameters. Section VII summarizes and concludes.

I. A Simple Model of Consumption

The consumer is assumed to live for T periods and to maximize a time-separable lifetime utility function given by

$$(1)\quad U = \frac{1}{[1-(1/\gamma)]}\left[\sum_{t=1}^{T}(1+\beta)^{(1-t)}u_t^{\{1-(1/\gamma)\}}\right],$$

where u_t is given by the CES form:

$$(2)\quad u_t\left[N_t^{\{1-(1/\rho)\}} + \theta S_t^{\{1-(1/\rho)\}}\right]^{1/\{1-(1/\rho)\}}.$$

Consumption of the nondurable good in period t is denoted by N_t, and the stock of the durable good is denoted by S_t. We assume that the service flow (consumption) from durable goods is proportional to the stock held. Hence, we interpret θ as the product of within-period intensity of preference for the durable good and the ratio of the flow of the durable good's services to its stock.[3] This allows the stock of the durable good—rather than the flow of services—to be used as an argument in the utility function. The parameter γ is the intertemporal elasticity of substitution; ρ is the within-period elasticity of substitution between the nondurable and the durable good; and β is the rate of time preference. These parameters are assumed to be constant over the consumer's lifetime.

The maximization of U in equation (1) is subject to the following budget constraints:

$$(3)\quad D_{t+1} = S_t(1-\delta) \qquad t = 1,\ldots T$$

$$(4)\quad A_{t+1} = [A_t + W_t - N_t - p(S_t - D_t)](1+r) \qquad t = 1,\ldots T$$

$$(5)\quad N_T + p(S_T - D_T) \le A_T + W_T + pS_T[(1-\delta)/(1+r)].$$

1 We should clarify two points: First, the analysis focuses exclusively on the distortions from a capital income tax and does not take into account the fact that mortgage interest on housing is subsidized. Second, our study is not conducted within a general equilibrium framework. General equilibrium feedback effects may alter the final pre- and after-tax interest rates, thereby influencing both components of the excess burden.

2 "Lifetime budget" refers to the amount of money (in present value) necessary to purchase the goods and leisure consumed over one's entire lifetime. This gauge of excess burden is known as the "wealth equivalent" measure.

3 We are indebted to an anonymous referee for pointing out this interpretation of the parameter θ.

In these constraints, A_t represents financial assets and D_t is the stock of the durable good owned by the consumer at the beginning of period t. The durable good's rate of depreciation over one period is given by δ, and its relative price is denoted by p. The consumer is assumed to receive a wage, W (which we set at unity), and purchases of the two goods are assumed to occur at the beginning of each period. The difference, $S_t - D_t$, thus represents the addition to the stock of the durable good in period t. Equations (3) and (4) are asset accumulation conditions that indicate how consumption choice in period t affects the portfolio of assets available at the beginning of period $t+1$. Equation (5) is a terminal-asset-value constraint. It specifies that the total expenditure on the nondurable good and on the net addition to the stock of the durable good at the beginning of the last period cannot exceed the sum of the financial assets held and wages received at the beginning of the period plus the discounted value of the depreciated stock of the durable good that is assumed to be sold at the end of the period. The discount rate is given by r.

Successively substituting equations (3) and (4) for index t into the same equations for index $t+1$, for all t where $1 \leq t \leq T$, yields the lifetime budget constraint facing the consumer:

$$(6) \quad PVR = \sum_{t=1}^{T} W_t (1+r)^{(1-t)} = \sum_{t=1}^{T} N_t (1+r)^{(1-t)} + \sum_{t=1}^{T} pqS_t (1+r)^{(1-t)},$$

where $q = (r+\delta)/(1+r)$. In terms of units of the nondurable good, N, the rental cost of a unit of the durable good is given by pq; it represents the cost due to forgone interest and depreciation incurred by holding a unit of the durable good for one period. The right side of equation (6) is the present value of total expenditures on the two goods over the agent's lifetime, and the left side is the present value of resources. Thus viewed, the intertemporal maximization problem is isomorphic to a static consumer choice problem. There are $2T$ goods with relative prices that equal their respective coefficients in equation (6). Using familiar techniques, one can obtain the indirect utility function associated with the consumer choice problem described here—that is, utility expressed as a function of the relative price of the durable good, p, its rental cost, q, the present value of resources, PVR, and other parameters of the utility function: $V = V(p, q, PVR; \rho, \gamma, \theta, \delta, \beta)$.

II. A Fully Compensated Capital Income Tax

Now, consider the imposition of a fully compensated capital income tax at rate τ, where $0 < \tau < 1$, which makes the net rate of interest $r_n = r(1-\tau)$. We assume that the collection of revenue from the tax and the compensation both occur at the end of each period. The lifetime budget constraint applicable to this case is

$$(7) \quad PVR = \sum_{t=1}^{T} W_t (1+r_n)^{(1-t)} + \sum_{t=1}^{T} C_t (1+r_n)^{(1-t)} = \sum_{t=1}^{T} N_t (1+r_n)^{(1-t)} + \sum_{t=1}^{T} pq_n S_t (1+r_n)^{(1-t)}.$$

Here, $q_n = (r_n + \delta)/(1+r_n)$, and C_t stands for the lump-sum compensation paid back at the end of period t. Under full compensation, C_t must equal the revenue collected from the capital income tax at the end of period t for all $t = 1,...T$. This implies that the budget constraint is identical to that under no taxation.[4] However, equations (6) and (7) show that the relative prices of the $2T$ goods change when the capital income tax is imposed. Because $\partial q_n/\partial\tau = r(1-\delta)/(1+r_n)^2 < 0$, in any given period the price of consuming the durable good relative to the nondurable good is lower than the same relative price in the no-tax case. This represents the static subsidy to the consumption of the durable good that is implicit in a capital income tax. Further, $\partial[1/(1+r_n)]/\partial\tau = r/(1+r_n)^2 > 0$; that is, the price of consuming either good in any period t is lower relative to the price of consuming the same good in a future period $t+s$, where $s \geq 1$. This represents the intertemporal distortion favoring earlier consumption that a capital income tax introduces.

Using the first-order conditions from maximizing utility subject to equation (7) and the no-tax budget constraint (6), one can obtain the indirect utility, V_c, under the compensated capital income tax case: $V_c = V_c(p, q_n, PVR; \rho, \gamma, \theta, \delta, \beta)$.

4 This can be demonstrated using a simple two-period example with one consumption good N. Assume that the consumer lives for two periods, consumes at the end of both, but earns a wage W only at the end of period 1. The lifetime budget constraint with no capital income tax is $N_1 + N_2/(1+r) = W$. With a compensated capital income tax, it is $N_1 + N_2/[1+r(1-\tau)] = W + C/[1+r(1-\tau)]$, where C is the compensation paid at the end of period 2—which is when the tax revenue on the return on period 1 saving is collected. Note that discounting is now done using the after-tax rate of interest faced by the consumer. Setting C equal to the tax collected at the end of period 2, $C = (W - N_1)r\tau$, and simplifying the expression yields the no-tax budget constraint.

Let λ_c stand for the percentage *reduction* in *PVR* necessary to equate the pre-tax utility, V, with the post-tax utility, V_c. To obtain the analytical formula for λ_c, replace *PVR* in the expression for V with $PVR(1 + \lambda_c)$, equate the resultant expression to V_c, and solve for λ_c. The total welfare loss from a capital income tax can then be expressed as[5]

$$(8)\quad \lambda_c = \frac{\{1 + pq[\theta/pq]^{\rho}\}}{\{1 + pq[\theta/pq_n]^{\rho}\}} \cdot \frac{\{1 + pq_n[\theta/pq_n]^{\rho}\}^{(1/f)}}{\{1 + pq[\theta/pq]^{\rho}\}^{(1/f)}} \cdot \frac{\{\sum_{t=1}^{T}[B/R]^{\gamma(t-1)}R^{(t-1)}\}}{\{\sum_{t=1}^{T}[B/R_n]^{\gamma(t-1)}R^{(t-1)}\}} \cdot \frac{\{\sum_{t=1}^{T}[B/R_n]^{\gamma(t-1)}R_n^{\gamma(t-1)}\}^{(1/g)}}{\{\sum_{t=1}^{T}[B/R]^{\gamma(t-1)}R^{(t-1)}\}^{(1/g)}} - 1.$$

III. The Static Component of Excess Burden

A measure of the static (within-period) component of the excess burden arising from a capital income tax can be obtained by removing the tax and replacing it with an equivalent compensated subsidy on the consumption of the durable good. Removing the capital income tax eliminates both the static and the intertemporal distortions. However, introducing a compensated subsidy on durables consumption reintroduces the static distortion by altering the relative price of durables vis-à-vis nondurables consumption. The subsidy must be levied at a rate equal to that implicit in the capital income tax. This rate of subsidy, σ, can be written as

$$(9)\quad \sigma = 1 - \frac{q_n}{q} = 1 - \frac{(r_n + \delta)/(1 + r_n)}{(r + \delta)/(1 + r)}.$$

As shown earlier, $\partial q_n/\partial\tau < 0$. Hence, the rate of subsidy, σ, is positive. The lifetime budget constraint relevant to this case is

$$(10)\quad PVR = \sum_{t=1}^{T} W_t(1 + r)^{(1-t)} + \Sigma H_t(1 + r)^{(1-t)} = \sum_{t=1}^{T} N_t(1 + r)^{(1-t)} + \sum_{t=1}^{T} p(1 - \sigma)qS_t(1 + r)^{(1-t)}.$$

Here, H_t is a lump-sum tax levied at the beginning of period t. It serves as a (negative) compensation against σ, the subsidy on the consumption of the durable good. There are two alternative but equivalent ways to view this subsidy. One can think of it as subsidizing either the rental cost of holding the durable good for one period or the purchase of new stocks of the durable good.

Let $p_\sigma = p(1 - \sigma)$ represent the net (post-subsidy) purchase price of new durable goods. Using first-order conditions derived from maximizing utility subject to equation (10), and using the no-tax budget constraint (6), one can obtain the indirect utility under the compensated capital income tax case: $V_s = V_s(p_\sigma, q, PVR; \rho, \gamma, \theta, \delta, \beta)$.

Following the same procedure as that used for obtaining λ_c in equation (8), the excess burden due to the static distortion, λ_s, can be evaluated as

$$(11)\quad \lambda_S = \frac{\{1 + pq[\theta/pq]^{\rho}\}\{1 + p_\sigma q[\theta/p_\sigma q]^{\rho}\}^{(1/f)}}{\{1 + pq[\theta/p_\sigma q]^{\rho}\}\{1 + pq[\theta/pq]^{\rho}\}^{(1/f)}} - 1.$$

Note that the static excess burden depends on the elasticity of substitution between durables and nondurables consumption, ρ, but not on the intertemporal elasticity of substitution, γ.

IV. The Intertemporal Component of Excess Burden

To isolate the intertemporal distortion in the relative price of current versus future consumption resulting from a capital income tax, the compensated capital income tax is retained and, in addition, a compensated tax on the consumption of the durable good is imposed. Retention of the capital income tax maintains the static and intertemporal distortions. However, the additional tax on durables consumption neutralizes the static distortion, leaving only the intertemporal distortion in place. As in the previous case, the tax must be levied at a rate equivalent to the rate of subsidy on durables consumption that is implicit in the capital income tax. The equivalent tax rate, μ, on the durable good is given by

$$(12)\quad \mu = \frac{q}{q_n} - 1 = \frac{(r + \delta)/(1 + r)}{(r_n + \delta)/(1 + r_n)} - 1.$$

5 Details of the derivations are available from the authors upon request.

Again, since $\partial q_n / \partial \tau < 0$, the tax rate, μ, is positive. The agent's lifetime budget constraint now becomes

$$(13)\quad PVR = \sum_{t=1}^{T} W_t (1 + r_n)^{(1-t)} + \sum_{t=1}^{T} C_t (1 + r_n)^{(1-t)} + \sum_{t=1}^{T} G_t (1 + r_n)^{(1-t)} = \sum_{t=1}^{T} N_t (1 + r_n)^{(1-t)} + \sum_{t=1}^{T} p_t (1 + \mu) q_n S_t (1 + r_n)^{(1-t)}.$$

Here, G_t stands for a lump-sum transfer made at the beginning of each period to compensate for the tax, μ, levied on consumption of the durable good in each period. Because the capital income tax is maintained in this case, C_t, the corresponding end-of-period compensation for each period t, also enters the budget constraint. As in the case of the subsidy, the tax on the durable good can be viewed either as a tax on the rental cost of holding the good for one period or as a tax on the purchase of new stocks of durables.

Let $p_\mu = p(1 + \mu)$ represent the gross price of new stocks of durable goods. Following the same procedure of maximizing utility subject to the budget constraint (13), and using the first-order conditions with the no-tax budget constraint (6), we can obtain the indirect utility function for this case: $V_m = V_m(p_\mu, q_n, PVR; \rho, \gamma, \theta, \delta, \beta)$. Note that $p_\mu q_n = pq$. Hence, the relative prices of the two goods within any period are restored to those prevailing under the no-tax budget constraint (6).

Using the same procedure as earlier, the excess burden due to the intertemporal distortion, λ_m, becomes

$$(14)\quad \lambda_m = \frac{\{\sum_{t=1}^{T} [B/R]^{\gamma(t-1)} R^{(t-1)}\}}{\{\sum_{t=1}^{T} [B/R_n]^{\gamma(t-1)} R^{(t-1)}\}} \cdot \frac{\{\sum_{t=1}^{T} [B/R_n]^{\gamma(t-1)} R_n^{(t-1)}\}^{(1/g)}}{\{\sum_{t=1}^{T} [B/R]^{\gamma(t-1)} R^{(t-1)}\}^{(1/g)}} - 1.$$

Note that λ_m depends on the intertemporal elasticity of substitution, γ, but not on the within-period elasticity of substitution between durables and nondurables consumption, ρ.

V. Does the Total Excess Burden Equal the Sum of Its Parts?

It is possible to show that under the CES specification of consumer preferences used here, the sum of the static and intertemporal components of excess burden is *almost* equal to the combined excess burden from a capital income tax. Rewrite equations (11) and (14) in abbreviated fashion as $\lambda_s = (X - 1)$ and $\lambda_m = (Y - 1)$, where X is the term in equation (11) involving p, p_σ, q, θ, and ρ; and Y is the term in equation (14) involving B, R, R_n, and γ. Noting that $p_\sigma q = pq_n$, equation (8) can be written as

$$(15)\quad \lambda_c = (XY - 1).$$

However, adding equations (11) and (14) in abbreviated form yields

$$(16)\quad \lambda_s + \lambda_m = (X - 1) + (Y - 1) = [(XY - 1) - (X - 1)(Y - 1)] = \lambda_c - \lambda_m \lambda_s.$$

Because the product $\lambda_m \lambda_s$ becomes negligibly small when λ_m and λ_s are small, one can conclude that the total excess burden from a capital income tax is closely approximated by the sum of its static and intertemporal components.

VI. Welfare Loss: Results with a 60-Period Time Horizon

Calibration

To obtain the wealth equivalent measure of excess burden, it is necessary to make assumptions about the utility parameters ρ, γ, δ, θ, and β, the pre-tax rate of interest r, the relative price of the durable good p, and the rate of capital income taxation τ. To do this, we select base-case values for the different utility parameters, drawing on the findings of other empirical studies. We then examine the magnitude of the wealth equivalent measure of excess burden and analyze its sensitivity to changes in different parameters for each of the three compensated tax schemes.

Empirical evidence on the value of ρ is sparse. Mankiw's (1982) study establishes a range of between 0.77 and 1.23, but the

FIGURE 1

Response of Excess Burden to Changes in γ

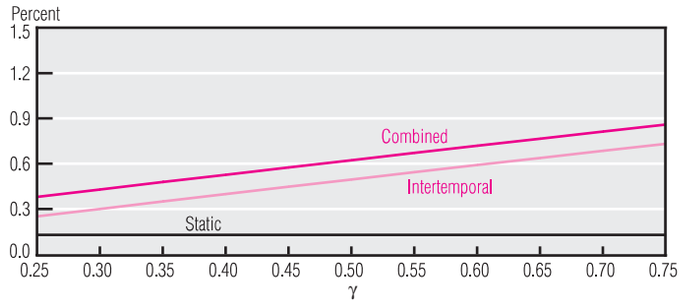


FIGURE 2

Response of Excess Burden to Changes in ρ

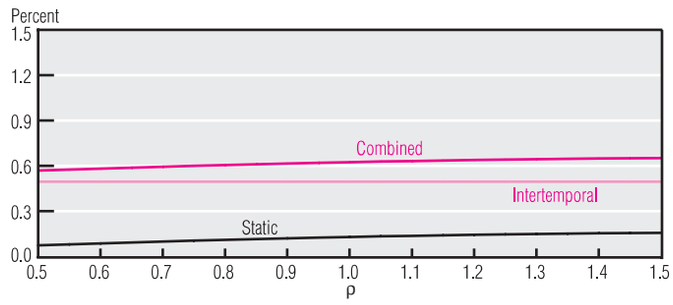
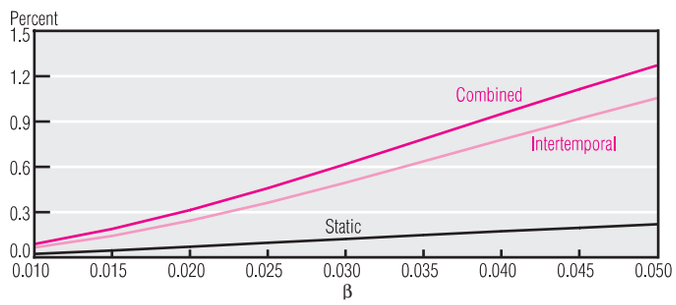


FIGURE 3

Response of Excess Burden to Changes in β



SOURCE: Authors' calculations.

hypothesis that ρ equals unity cannot be rejected. For the purposes of this study, the base-case value is set at unity.

For γ, values of 0.28 (Ghez and Becker [1975]), 0.25 (Grossman and Shiller [1981]), and < 0.1 (Hall [1988]) have been reported. However, recent studies analyzing labor–leisure choices suggest that intertemporal substitution elasticities are much larger, ranging from 0.3 (Mulligan [1995]) to 0.9 (Rupert, Rogerson, and Wright [1996]). Therefore, the base-case value selected for γ in our study is 0.5.

The base-case value chosen for θ is 2.5, which makes the expenditure on nondurable goods and services equal to 40 percent of the stock of the durable good when the rate of capital income taxation is 30 percent.[6] The base-case values of both r and β have been set at 0.03. The relative price of the durable good, p, has been chosen so that the cost of holding one unit of the durable good for one period equals the cost of purchasing one unit of the nondurable good in the no-tax case; that is, $pq = 1$.

A reasonable depreciation rate on major durable goods such as housing is 3 percent annually, but the rate on durable appliances is much higher. Hence, 0.05 has been used as the base-case value of δ.

Results and Sensitivity Analysis

The base-case parameters yield values of 0.13 percent for the static component, 0.50 percent for the intertemporal component, and 0.62 percent for the combined excess burden.[7] Thus, under our chosen base-case values, the total excess burden due to a capital income tax is sizable, with the static component about 26 percent as large as the intertemporal component. This implies that focusing exclusively on the intertemporal source of welfare loss would likely underestimate the welfare loss from a capital income tax by about 26 percent!

■ **6** This parameterization is based on 1994 data on personal consumption expenditures of $4,120 billion and outstanding stock of residential real estate (housing and land) and consumer durable goods of $9,956 billion. These figures are taken from the *Economic Report of the President,* 1997, and the Federal Reserve System's *Balance Sheets of the U.S. Economy,* 1945–94. The ratio of nondurable expenditures and durable goods stock turns out to be 41 percent. Because these figures are based on an economy with a capital income tax, our calibration of θ = 2.5 is made in the presence of a 30 percent tax rate.

■ **7** The numbers do not add up because of rounding and because the sum of the components is greater than the total excess burden. See equation (16), keeping in mind that λ_s, λ_m, and λ_c are all negative.

FIGURE 4

Response of Excess Burden to Changes in δ

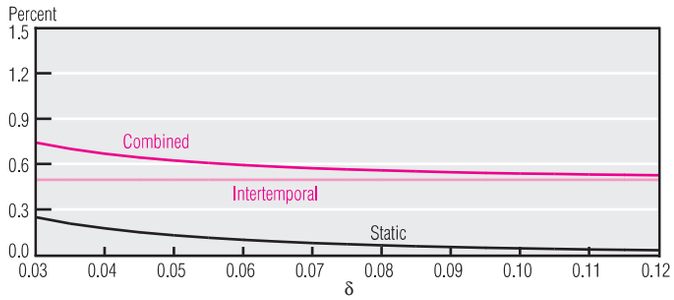


FIGURE 5

Response of Excess Burden to Changes in τ

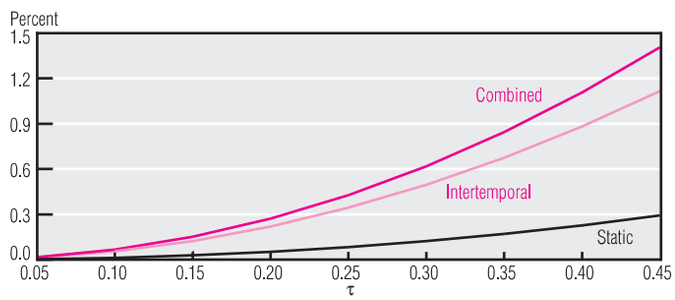
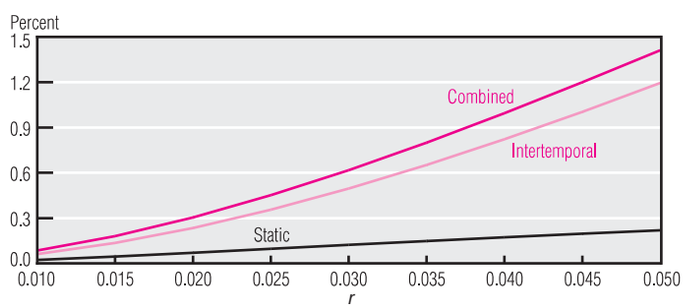


FIGURE 6

Response of Excess Burden to Changes in *r*



SOURCE: Authors' calculations.

Figures 1 through 6 show the response of excess burden to changes in various parameters. The numbers plotted represent the percentage reduction in *PVR* required under the no-tax case to obtain the same utility level as under the relevant compensated tax/subsidy scheme. In each instance, all parameters except the one under consideration are set at their base-case levels.

Figure 1 shows the response of excess burden to changes in γ. The combined excess burden increases from about 0.38 percent to about 0.86 percent when γ is raised from 0.25 to 0.75. As expected, the static component is not responsive to changes in the value of γ. Figure 2 shows that the combined excess burden from a capital income tax goes from 0.57 percent to 0.65 percent in response to a change in ρ from 0.5 to 1.5. Again, as expected, the intertemporal component does not change when the value of ρ is altered.

Figure 3 indicates that simultaneously increasing the rates of interest and time preference while maintaining equality between them results in larger excess burdens. However, the rate of increase of the intertemporal component is greater than that of the static component.

The expression for λ_m (equation [14]) does not involve δ. Hence, the intertemporal component is not responsive to changes in the depreciation rate. The static and the combined excess burdens, on the other hand, are negatively related to δ. This can be shown by differentiating equation (11) with respect to δ:

$$(17) \qquad \frac{\partial\sigma}{\partial\delta} = -\frac{(1+r)(1+r_n)(r-r_n)}{(1+r_n)^2(r+\delta)^2} < 0.$$

Figure 4 shows that the combined excess burden declines from about 0.74 percent to 0.53 percent when δ is increased from 0.03 to 0.12. The static component is almost 50 percent smaller than the intertemporal component for very low values of δ. This implies that the static distortion could be particularly substantial for major durable goods (such as housing), which have low depreciation rates.

Figure 5 plots the responses of the combined excess burden and its components to changes in the capital income tax rate, τ. In conformity with the rule that excess burdens increase with the square of the tax rate, the figure shows all three curves rising at an increasing rate. For example, a 50 percent reduction in the tax rate (from 30 to 15 percent) would result in a 76 percent reduction in the excess burden—from 0.62 to 0.15 percent. Based on a

GDP of $7,254 billion (its 1995 value), this would amount to a gain of about $34 billion.

The size of the welfare loss is also sensitive to the assumed rate of interest. Figure 6 shows that the combined excess burden increases from 0.62 percent to 0.99 percent when r is raised by just 100 basis points from its base-case value of 3 percent.

Neutralizing the Static Distortion

As mentioned earlier, ignoring the static distortion would result in substantial underestimation of the welfare loss from a capital income tax. Taking GDP at its 1995 value of $7,254 billion, the total welfare loss from a capital income tax under our base-case parameters is estimated at $45 billion annually. The implicit *subsidy* to durable goods consumption induces a higher lifetime consumption of durables and a lower consumption of nondurables. Under our base-case parameters, we estimate that the demand for holding durable-goods stocks rises by 3.4 percent and the demand for nondurables declines by 7.5 percent.

It follows, then, that eliminating the capital income tax would be a desirable goal for tax reform. Indeed, this is the motivation of recent proposals for replacing the income tax with a flat tax on wages. The flat-tax proposals have been criticized, however, because of their likely impact on equity. If such objections make eliminating the capital income tax infeasible, our analysis suggests that it may nevertheless be possible to reduce or eliminate the static component of the welfare loss. This could be done by imposing a tax on the purchase of durable goods. The appropriate rate of taxation can be calculated as $\mu = 1 - (q/q_n)$. Under our base-case parameters, the rate of additional tax on durables purchases turns out to be about 11.7 percent. This would reduce the welfare loss by about $9 billion annually.

VII. Conclusion

Our theoretical analysis shows how the total excess burden from a capital income tax can be decomposed into its static and intertemporal parts by using a CES utility specification. Under this specification, the sum of the static and intertemporal components closely approximates the combined excess burden. We also show that the static component of the excess burden arising from capital income taxation may be sizable. Under reasonable assumptions about elasticities of substitution and other parameters, ignoring this source of distortion causes an underestimation of the welfare loss by as much as 26 percent.

Furthermore, our analysis indicates that the static distortion caused by capital income taxation can be substantial for major durable goods such as housing, which have relatively low rates of depreciation. The total distortion from the capital income tax is estimated to be $45 billion annually. Shifting from the income tax to a flat-tax system would eliminate this welfare loss. However, if such a reform is infeasible because of equity or other reasons, it may be desirable to impose a tax on the purchase of durable goods, thereby eliminating the static component of excess burden.

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