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WHAT DOES THE CAPITAL INCOME TAX DISTORT?

by Jinyong Cai and Jagadeesh Gokhale

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Abstract

In addition to taxing future consumption (including leisure), capital income taxation subsidizes the consumption of durables. The taxation of future consumption may be characterized as an intertemporal distortion, while the subsidy to durables may be characterized as a static distortion. The magnitude of this intertemporal distortion has received considerable attention, but few analyses have dealt with the static distortion.

This paper decomposes the excess burden arising from capital income taxation into its static and intertemporal components. The analysis is based on a life-cycle model with a constant elasticity of substitution utility function in one durable and one nondurable good. Calculations indicate that for reasonable utility parameters, the static component of the excess burden is of the same order of magnitude as the intertemporal component. In the case of major durable goods such as housing, which have relatively low depreciation rates, the static component is large and may exceed the intertemporal component. This suggests that an additional tax on the purchase of new durable goods would significantly reduce the overall excess burden arising from a capital income tax.

I. Introduction

This paper examines the excess burden that arises from the imposition of a capital income tax. It is well known that such a tax leads to both static and intertemporal distortions. First, a tax on capital income implicitly subsidizes the consumption of durable goods if the imputed rent income from these goods is not equally taxed. Second, by lowering the net rate of interest, a capital income tax lowers the price of current consumption relative to future consumption. Most studies of the welfare losses that result from capital income taxation focus exclusively either on the static or the intertemporal distortion.

Some early studies (Harberger [1966], Shoven [1976]) examine the static aspect of the excess burden by investigating the welfare cost that emerges when various sectors of an economy face different tax rates. Subsequent studies (Levhari and Sheshinski [1972], Feldstein [1978]) extend the analysis to an intertemporal framework. Chamley (1981) analyzes the welfare cost of a capital income tax in an intertemporal general-equilibrium model in which household consumption, labor supply, factor prices, and capital stock are all endogenous. Auerbach, Kotlikoff, and Skinner (1983) construct a general-equilibrium simulation model to assess the efficiency gains that result from dynamic tax reform. Auerbach (1989) develops an overlapping-generations general-equilibrium model to measure the relative magnitudes of distortions associated with capital income taxation across industries, assets, and time.

Under capital income taxation, income from the services of durable goods is excluded from the tax base, partly because such income is hard to impute. However, there appears to be no single study that compares the static and intertemporal components of the excess burden resulting from capital income taxation. A number of studies recommend eliminating the capital income tax in order to avoid the intertemporal distortion. However, its elimination may be undesirable because of equity or other considerations. Alternative tax schemes devised to reduce or to eliminate the static component of the distortion could minimize the welfare loss associated with a capital income tax. Hence, understanding the relative magnitudes of these two distortions may be important for setting tax policy.

This study measures the magnitudes of the excess burdens attributable to these static and intertemporal distortions through the use of a 60-period model of life-cycle consumption. In this model, the representative agent's preferences are specified in a time-separable constant elasticity of substitution (CES) utility function in one durable and one nondurable good. We use compensated taxes and subsidies on consumption of the durable good to decompose the total excess burden into its static and intertemporal components. The wealth equivalent measure of excess burden is computed. This method requires calculation of the reduction in the present value of resources that results in the same loss of utility as that arising from a fully compensated tax scheme.

Is the overall excess burden from a capital income tax equal to the sum of its static and intertemporal components? The theoretically correct answer is no. However, our analysis and computations reveal that, for reasonable parameter values, the difference between the sum of these two components and the combined excess burden is negligible. We also show that the static component of the excess burden is independent of the intertemporal elasticity of substitution, and that the intertemporal component is neutral with respect to the within-period elasticity of substitution between durables and nondurables.

The remainder of the paper is organized as follows. Section IIA describes a life-cycle model of consumption with one durable and one nondurable good. Sections IIB, IIC, and IID present the formulations for three different compensated tax schemes used to decompose the total excess burden into its static and intertemporal components. Section IIE discusses 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 III summarizes and concludes.

II. Compensated Capital Income Taxes in a Life-Cycle Model

A. The Model

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

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

where u_t is given by the CES form:

$$(2) \qquad u_t = \left[(N_t+1)^{(1 - \frac{1}{\rho})} + \theta \, (S_t+1)^{(1 - \frac{1}{\rho})} \right]^{\frac{1}{(1 - \frac{1}{\rho})}}$$

N_t is consumption of the nondurable good in period t, and S_t is the stock of the durable good held in period t. We assume that the consumption of the durable good is proportional to the stock held. This allows the stock of the durable good rather than the flow of services from it 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, θ is the within-period intensity of preference for consumption of the durable good, and β is the rate of time preference. These parameters are assumed to be constant over the consumer's lifetime. The arguments in the single-period utility function are displaced by unity in order to obtain a lower bound on utility when consumption of either good is zero.

The maximization is subject to the following budget constraints:

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

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

$$(5)\quad N_T + p(S_T - D_T) \le A_T + W_T + pS_T\left[\frac{1-\delta}{1+r}\right].$$

In these constraints, A_t and D_t represent the financial assets and the stock of the durable good, respectively, at the beginning of period t. δ is the rate of depreciation of the durable good over a single period, and p is the relative price of the durable good. The consumer is assumed to receive a wage, W, of unity at the beginning of each period. Purchases of the two goods are also 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.

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

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

where $q = (r+\delta)/(1+r)$. Taking N_1 as the numeraire, pq is the rental cost of a unit of the durable good; it represents the costs due to forgone interest and depreciation incurred by holding a unit of this 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. Viewed in this way, 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). The indirect utility obtained by maximizing equation (1) subject to equation (6) is:

$$(7) \quad V = \frac{1}{(1-\frac{1}{\gamma})} \frac{\left[PVR + (1+pq)\sum_{t=1}^{T} R^{(t-1)}\right]^{g}}{\left[1 + pq\left[\frac{\theta}{pq}\right]^{\rho}\right]^{g} \left[\sum_{t=1}^{T} \left[\frac{B}{R}\right]^{\gamma(t-1)} R^{(t-1)}\right]^{g}} \times$$

$$\left[\sum_{t=1}^{T} B^{\gamma(t-1)} R^{(1-\gamma)(t-1)}\right] \left[1 + pq\left[\frac{\theta}{pq}\right]^{\rho}\right]^{(g/f)}.$$

Here, $B = 1/(1+\beta)$, $R = 1/(1+r)$, $g = 1-(1/\gamma)$, and $f = 1-(1/\rho)$.

B. A Fully Compensated Capital Income Tax

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

$$(8)\ \text{PVR} = \sum_{t=1}^{T} W_t(1+r_n)^{(1-t)} + \sum_{t=1}^{T} C_t(1+r_n)^{-t} = \sum_{t=1}^{T} N_t(1+r_n)^{(1-t)} + \sum_{t=1}^{T} pq_n S_t(1+r_n)^{(1-t)}.$$

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 the same as it would be under no taxation. However, as is evident from equations (6) and (8), the relative prices of the 2T goods change when the capital income tax is imposed. Take N_1 as the numeraire again. Because $\partial q_n/\partial\tau = -r(1-\delta)/(1+r_n)^2 < 0$, in any given period the relative price of consumption of the durable good vis-a-vis consumption of the nondurable good is lower than the same relative price in the no-tax case. This represents the static subsidy implicit in a capital income tax. Further, since $\partial[1/(1+r_n)]/\partial\tau = r/(1+r_n)^2 > 0$, 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 ($s \geq 1$). This represents the intertemporal distortion favoring earlier consumption that is introduced by a capital income tax. Maximize equation (1) subject to the constraint in equation (8). Then solve for the demand functions using the resultant first order conditions and the no-tax budget constraint (equation [6]). Resubstitute the demand functions into equation (1) to obtain the indirect utility function for the compensated tax scheme:

$$(9)\quad V_c = \frac{1}{(1-\frac{1}{\gamma})} \frac{\left[PVR + (1+pq)\sum_{t=1}^{T} R^{(t-1)}\right]^g}{\left[1 + pq\left[\frac{\theta}{pq_n}\right]^{\rho}\right]^g \left[\sum_{t=1}^{T} \left[\frac{B}{R_n}\right]^{\gamma(t-1)} R^{(t-1)}\right]^g} \times$$

$$\left[\sum_{t=1}^{T} B^{\gamma(t-1)} R_n^{(1-\gamma)(t-1)}\right] \left[1 + pq_n\left[\frac{\theta}{pq_n}\right]^{\rho}\right]^{(g/f)} .$$

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 equation (7) with PVR$(1+\lambda_c)$, equate the resultant expression to equation (9), and solve for λ_c:

$$(10)\quad \lambda_c = \left[\frac{PVR + A}{PVR}\right] \left[\frac{\left[1 + pq\left[\frac{\theta}{pq}\right]^{\rho}\right] \quad \left[1 + pq_n\left[\frac{\theta}{pq_n}\right]^{\rho}\right]^{(1/f)}}{\left[1 + pq\left[\frac{\theta}{pq_n}\right]^{\rho}\right] \quad \left[1 + pq\left[\frac{\theta}{pq}\right]^{\rho}\right]^{(1/f)}} \times \right.$$

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

where $A = (1+pq) \sum_{t=1}^{T} R^{(t-1)}$.

C. The Static Component of Excess Burden

A measure of the static (durables versus nondurables) component of the excess burden arising from a capital income tax can be obtained by replacing the tax with an equivalent compensated subsidy on consumption of the durable good. This removes the intertemporal distortion, but preserves the static distortion in the relative price of the durable good vis-a-vis the nondurable good. The equivalent rate of subsidy, σ, can be written as:

$$(11) \quad \sigma = 1 - \left[\frac{(r_n+\delta)/(1+r_n)}{(r+\delta)/(1+r)}\right].$$

The lifetime budget constraint relevant for this case is then:

$$(12) \quad PVR = \sum_{t=1}^{T} W_t(1+r)^{(1-t)} + \sum_{t=1}^{T} H_t(1+r)^{(1-t)}$$

$$= \sum_{t=1}^{T} N_t(1+r)^{(1-t)} + \sum_{t=1}^{T} pq(1-\sigma)S_t(1+r)^{(1-t)}.$$

Here, H_t is a lump-sum tax levied at the beginning of period t. This serves as a (negative) compensation against the subsidy, σ, 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 1) the rental cost of holding the durable good for one period or 2) the purchase of *new* stocks of the durable good.

Let $p_\sigma = p(1-\sigma)$ represent the net purchase price of new durable goods. Maximize equation (1) subject to equation (12) and use the first order conditions and the no-tax budget constraint (equation [6]) to obtain consumption demand functions. Resubstitute these into equation (1) to obtain the indirect utility function:

$$(13) \quad V_s = \frac{1}{(1-\frac{1}{\gamma})} \frac{\left\{PVR + (1+pq)\sum_{t=1}^{T} R^{(t-1)}\right\}^g}{\left\{1 + pq[\frac{\theta}{p_\sigma q}]^\rho\right\}^g \left\{\sum_{t=1}^{T} [\frac{B}{R}]^{\gamma(t-1)} R^{(t-1)}\right\}^g} \times$$

$$\left\{\sum_{t=1}^{T} B^{\gamma(t-1)} R^{(1-\gamma)(t-1)}\right\} \left\{1 + p_\sigma q[\frac{\theta}{p_\sigma q}]^\rho\right\}^{(g/f)}.$$

Following the same procedure as that used for λ_c above, the excess burden due to the static distortion, λ_s, is then:

$$(14)\quad \lambda_s = \left[\frac{PVR + A}{PVR}\right]\left[\frac{\left[1 + pq\left[\frac{\theta}{pq}\right]^{\rho}\right]\left[1 + p_{\sigma}q\left[\frac{\theta}{p_{\sigma}q}\right]^{\rho}\right]^{(1/f)}}{\left[1 + pq\left[\frac{\theta}{p_{\sigma}q}\right]^{\rho}\right]\left[1 + pq\left[\frac{\theta}{pq}\right]^{\rho}\right]^{(1/f)}} - 1\right].$$

Note that the static excess burden is independent of γ, the intertemporal elasticity of substitution.

D. The Intertemporal Component of Excess Burden

To isolate the intertemporal distortion in relative prices that results from a capital income tax, one must retain the compensated capital income tax and, in addition, levy a compensated tax on the consumption of the durable good. The latter must be levied at a rate equivalent to the rate of subsidy on the consumption of the durable good that is implicit in the capital income tax. Such a tax neutralizes the distortion in the within-period relative price of nondurable versus durable consumption, but preserves the distortion in relative prices of consumption across periods. The equivalent tax rate, μ, on the consumption of the durable good is given by:

$$(15)\quad \mu = \left[\frac{(r+\delta)/(1+r)}{(r_n+\delta)/(1+r_n)}\right] - 1.$$

The lifetime budget constraint now becomes:

$$(16)\quad PVR = \sum_{t=1}^{T} W_t(1+r_n)^{(1-t)} + \sum_{t=1}^{T} C_t(1+r_n)^{-t} + \sum_{t=1}^{T} G_t(1+r_n)^{(1-t)}$$

$$= \sum_{t=1}^{T} N_t(1+r_n)^{(1-t)} + \sum_{t=1}^{T} pq_n(1+\mu)S_t(1+r_n)^{(1-t)}.$$

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. Since the capital income tax is maintained, the corresponding compensations, C_t, for each period t also enter the budget constraint. As in the case of the subsidy, the tax on the durable good can likewise 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. The indirect utility function can then be derived by maximizing equation (1) subject to equation (16), using the first order conditions and the no-tax budget constraint (equation[6]) to obtain consumption demands, and resubstituting these into equation (1):

$$(17)\quad V_m = \frac{1}{(1-\frac{1}{\gamma})} \frac{\left[PVR + (1+pq)\sum_{t=1}^{T} R^{(t-1)}\right]^g}{\left[1 + pq\left[\frac{\theta}{p_\mu q_n}\right]^\rho\right]^g \left[\sum_{t=1}^{T}\left[\frac{B}{R_n}\right]^{\gamma(t-1)} R^{(t-1)}\right]^g} \times \left[\sum_{t=1}^{T} B^{\gamma(t-1)} R_n^{(1-\gamma)(t-1)}\right] \left[1+p_\mu q_n(\theta/p_\mu q_n)^\rho\right]^{(g/f)},$$

where $p_\mu q_n = pq$. Hence, the excess burden due to the intertemporal distortion, λ_m, can be written as:

$$(18)\quad \lambda_m = \left[\frac{PVR + A}{PVR}\right]\left[\frac{\left\{\left[\sum_{t=1}^{T}\left[\frac{B}{R}\right]^{\gamma(t-1)} R^{(t-1)}\right] \cdot \left[\sum_{t=1}^{T} B^{\gamma(t-1)} R_n^{(1-\gamma)(t-1)}\right]\right\}^{(1/g)}}{\left\{\left[\sum_{t=1}^{T}\left[\frac{B}{R_n}\right]^{\gamma(t-1)} R^{(t-1)}\right] \left[\sum_{t=1}^{T} B^{\gamma(t-1)} R^{(1-\gamma)(t-1)}\right]\right\}^{(1/g)}} - 1\right].$$

Note that λ_m is not a function of ρ, the within-period elasticity of substitution between the durable and nondurable goods.

It is possible to show that the sum of the static and intertemporal components of excess burden is almost equal to the combined excess burden from a capital income tax. Equations (14) and (18) can be written in an abbreviated fashion as:

(14a) $\lambda_s = F(PVR)\ (X - 1)$, and

(18a) $\lambda_m = F(PVR)\ (Y - 1)$.

Here, $F(PVR) = [(PVR+A)/PVR]$, X is the term in equation (14) involving p, p_σ, q, θ, and ρ, and Y is the term in equation (18) involving B, R, R_n, and γ. Note that $p_\sigma q = pq_n$. Hence, equation (10) can be written as:

(10a) $\lambda_c = F(PVR)\ (XY - 1)$.

Adding equations (14a) and (18a) yields:

(19) $\lambda_m + \lambda_s = F(PVR)\ [(XY - 1) - (1 - X)(1 - Y)]$.

It is easily verified that $\mathrm{Lim}_{\tau\to 0}\ X = \mathrm{Lim}_{\tau\to 0}\ Y = 1$. Hence, for small values of τ, the sum of λ_m and λ_s closely approximates λ_c.

E. Results with a 60-Period Time Horizon

In order 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 based on the findings of other empirical studies. We then examine the magnitude of the wealth equivalent measure and 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 (1985) study establishes a range of between 0.77 and 1.23, but the hypothesis that ρ equals unity cannot be rejected. For purposes of this study, we set the base-case value at unity.

For γ, values of 0.28 (Ghez and Becker [1975]), 0.07-0.35 (Grossman and Schiller [1980]), and < 0.1 (Hall [1988]) have been reported. We have selected the base-case value of 0.2.

For θ, we have chosen the base-case value of 0.8, which makes the share of expenditures on the durable good equal to 50 percent of that on the nondurable good when the rate of capital income taxation is zero.

We have set the base-case values of both r and β at 0.03. The relative price of the durable good, p, has been set 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 per year, but the rate on durable appliances is much higher. Hence, a base-case value of 0.05 has been used for δ.

The base-case parameters yield values of 0.45 percent for the static component, 0.61 percent for the intertemporal component, and 1.06 percent for the combined excess burden. The static component is thus 74 percent as large as the intertemporal component, accounting for roughly 42 percent of the combined figure.

Figures 1 through 8 show the response of excess burden to changes in the various model 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 scheme. In each case, all parameters other than the one under consideration are set to their base-case levels.

Figure 1 shows that the combined excess burden from a capital income tax rises from about 0.8 percent to about 1.3 percent in response to a change in ρ from 0.5 to 1.5. As expected, the intertemporal component does not change when the value of ρ is altered. At high values of ρ ($\rho \geq 1.2$), the static and intertemporal components are approximately equal.

Figure 2 shows the response of excess burden to changes in γ. The combined excess burden increases from about 0.75 percent to about 3.1 percent when γ is increased from 0.1 to 0.9. Again, as expected, the static component is not responsive to changes in the value of γ. For values of γ less than 0.15, the static component is larger than the intertemporal one. The two components are of similar size for values of γ in the range of the empirical estimates mentioned earlier.

Figure 3 indicates that increasing the rates of interest and time preference simultaneously 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 [18]) 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:

$$\text{(20)} \qquad \frac{\partial \sigma}{\partial \delta} = - \frac{(1+r)(1+r_n)(r-r_n)}{(1+r_n)^2(r+\delta)^2} < 0.$$

Figure 4 shows that the combined excess burden declines from about 1.48 percent to 0.95 percent when δ is increased from 3 percent to 6 percent. For low values of δ, the static component exceeds the intertemporal component.

This implies that the static distortion could be especially large for major durable goods such as housing, which have low depreciation rates.

Figure 5 shows the response of excess burden to changes in θ. As equation (18) indicates, θ plays no role in determining the size of the intertemporal component. Note that the static and the combined excess burdens are not very sensitive to changes in θ. Hence, even for a wide range of expenditure shares on the two goods, the static component is of the same order of magnitude as the intertemporal component.

The responses of the static, intertemporal, and combined excess burdens to an increase in τ are plotted in figure 6. 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.

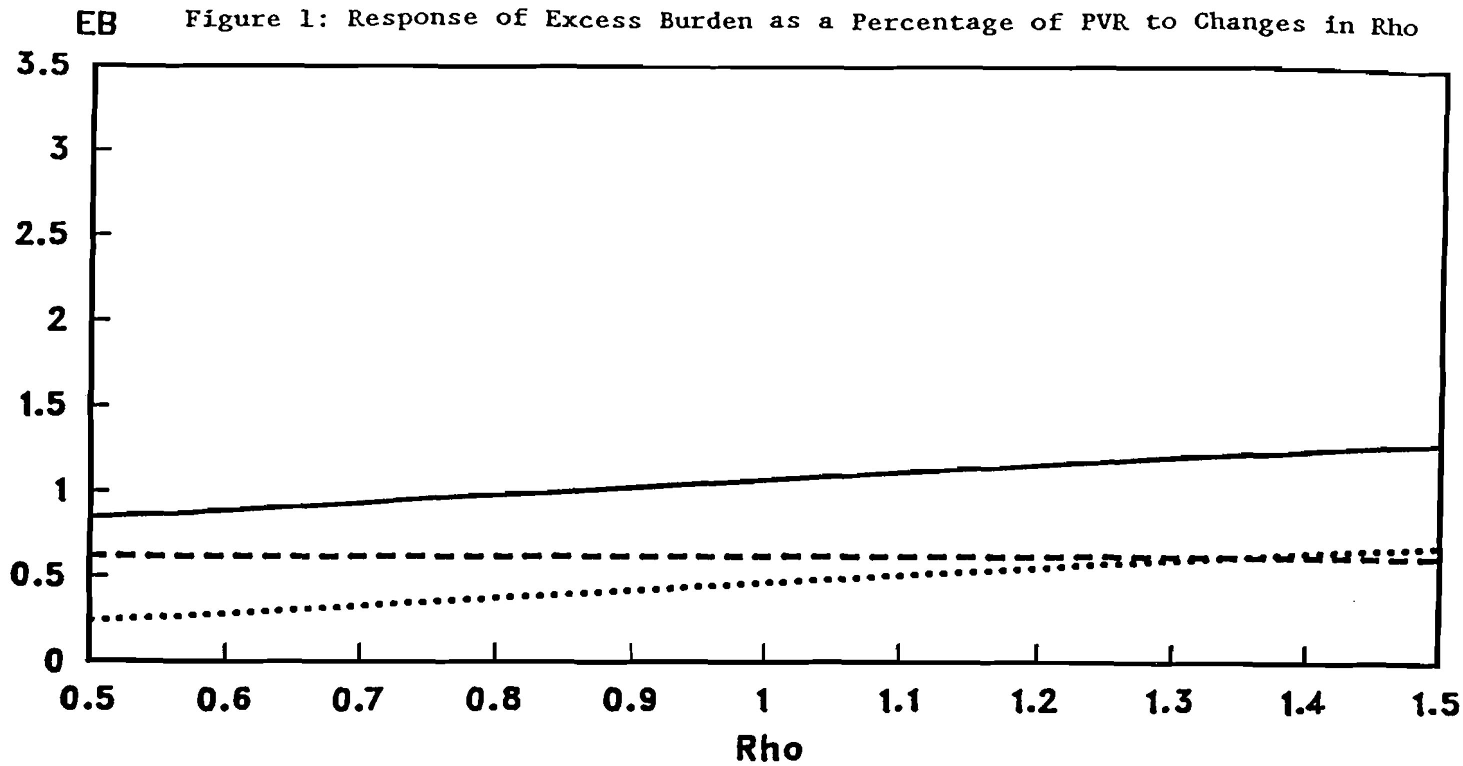
Figure 7 shows that the combined excess burden increases from 1.06 percent to about 2.8 percent when r is increased from 3 percent to 6 percent. Equations (14) and (18) show that the time preference rate, β, only affects the intertemporal component, while figure 8 demonstrates that this effect is very small. Changing the value of β from 3 percent to 6 percent changes the intertemporal component from 0.61 percent to 0.57 percent and the combined excess burden from 1.06 percent to 1.02 percent.

III. Conclusion

We show that the static component of the excess burden that arises from capital income taxation is sizable. For base-case values of the utility and other parameters, the static component is about three-fourths as large as the intertemporal component. Sensitivity results indicate that for some parameter values consistent with the findings of other empirical studies, the static component may even exceed the intertemporal component. Our analysis also reveals that under a CES utility specification, the sum of the static and intertemporal components is approximately equal to the combined excess burden.

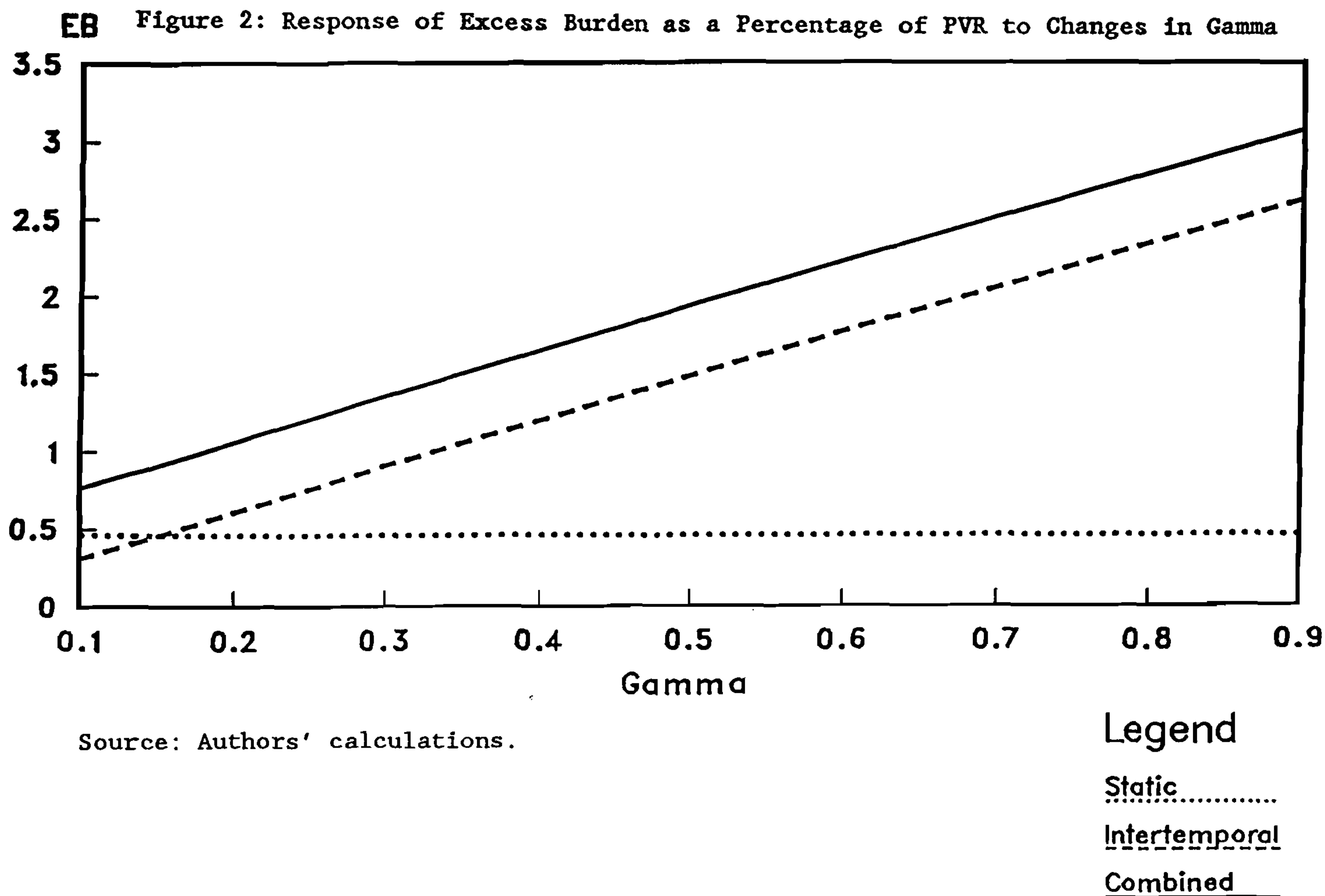
Furthermore, the static distortion caused by capital income taxation can be substantial in the case of major durable goods such as housing, which have relatively low rates of depreciation. Hence, given capital income taxation, the imposition of an additional tax on the purchase of new durable goods could lessen the overall excess burden by reducing or eliminating the static distortion in consumption choice between durables and nondurables.

Figure 1: Response of Excess Burden as a Percentage of PVR to Changes in Rho



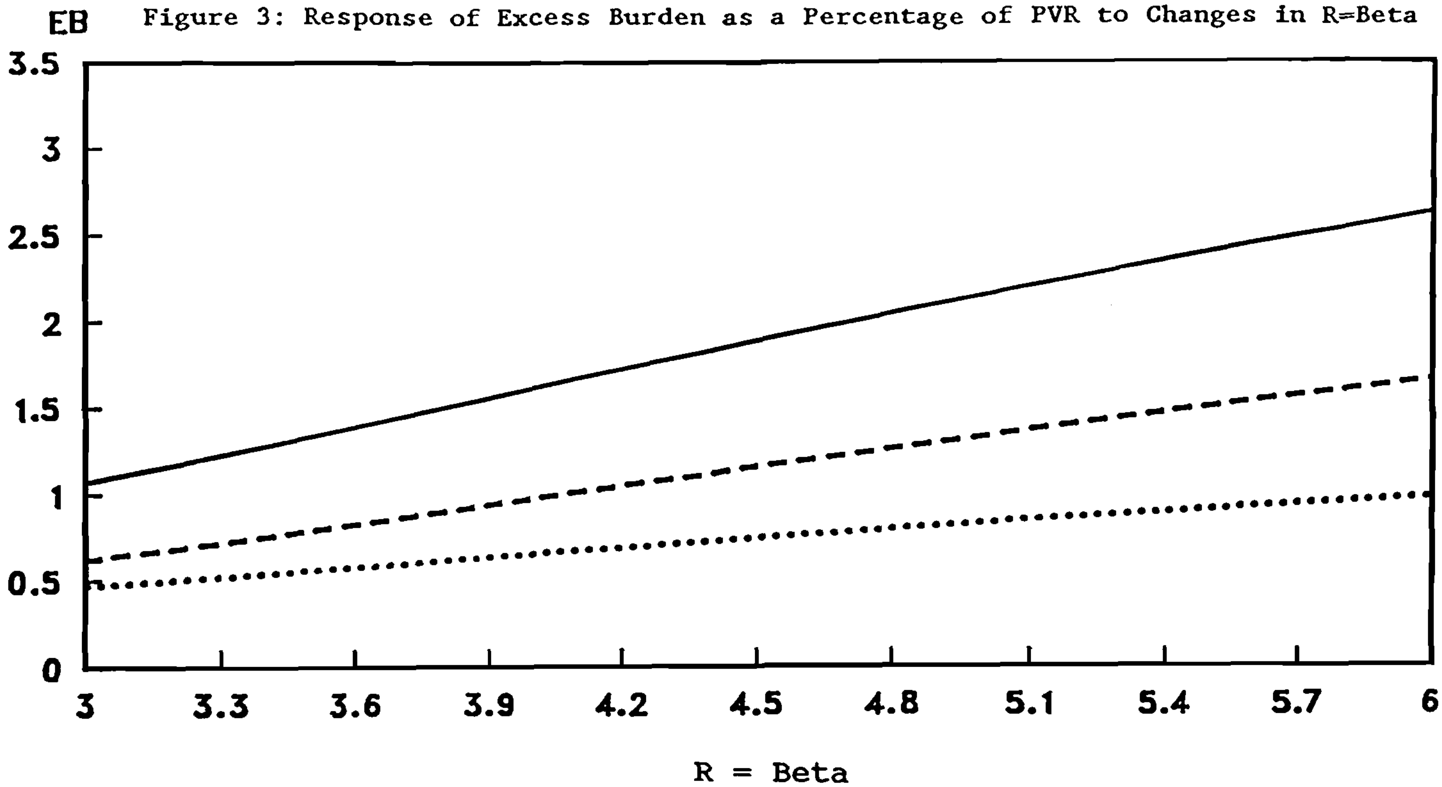
Source: Authors' calculations.

Figure 2: Response of Excess Burden as a Percentage of PVR to Changes in Gamma



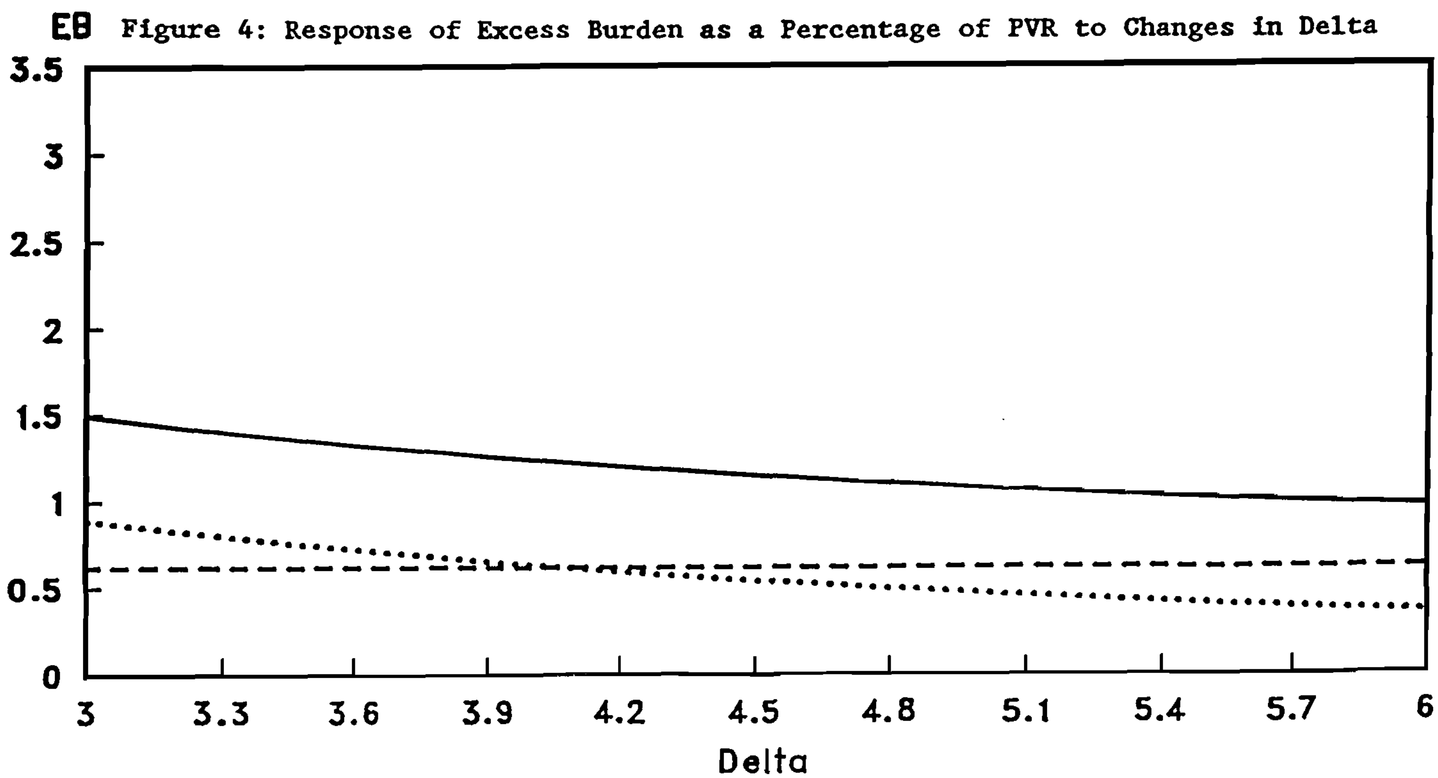
Source: Authors' calculations.

Figure 3: Response of Excess Burden as a Percentage of PVR to Changes in R=Beta



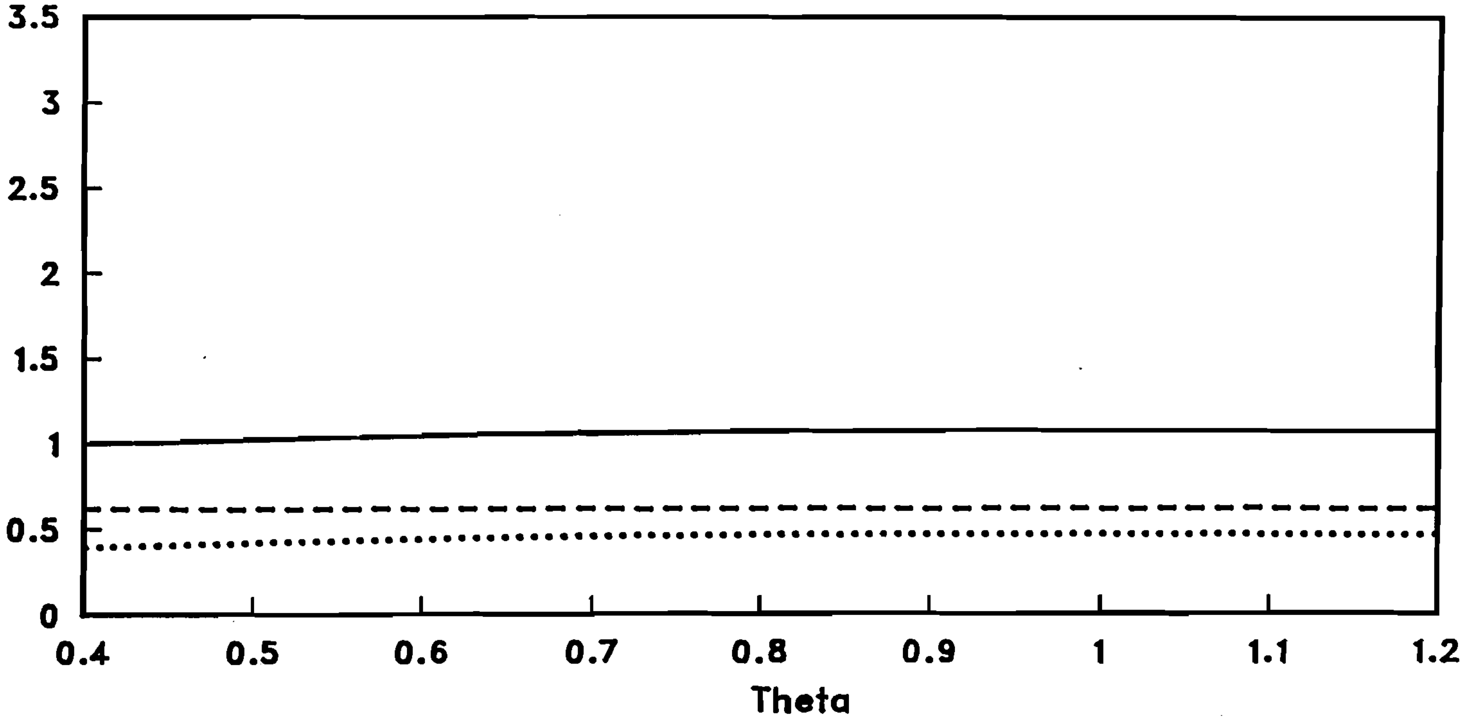
Source: Authors' calculations.

Figure 4: Response of Excess Burden as a Percentage of PVR to Changes in Delta



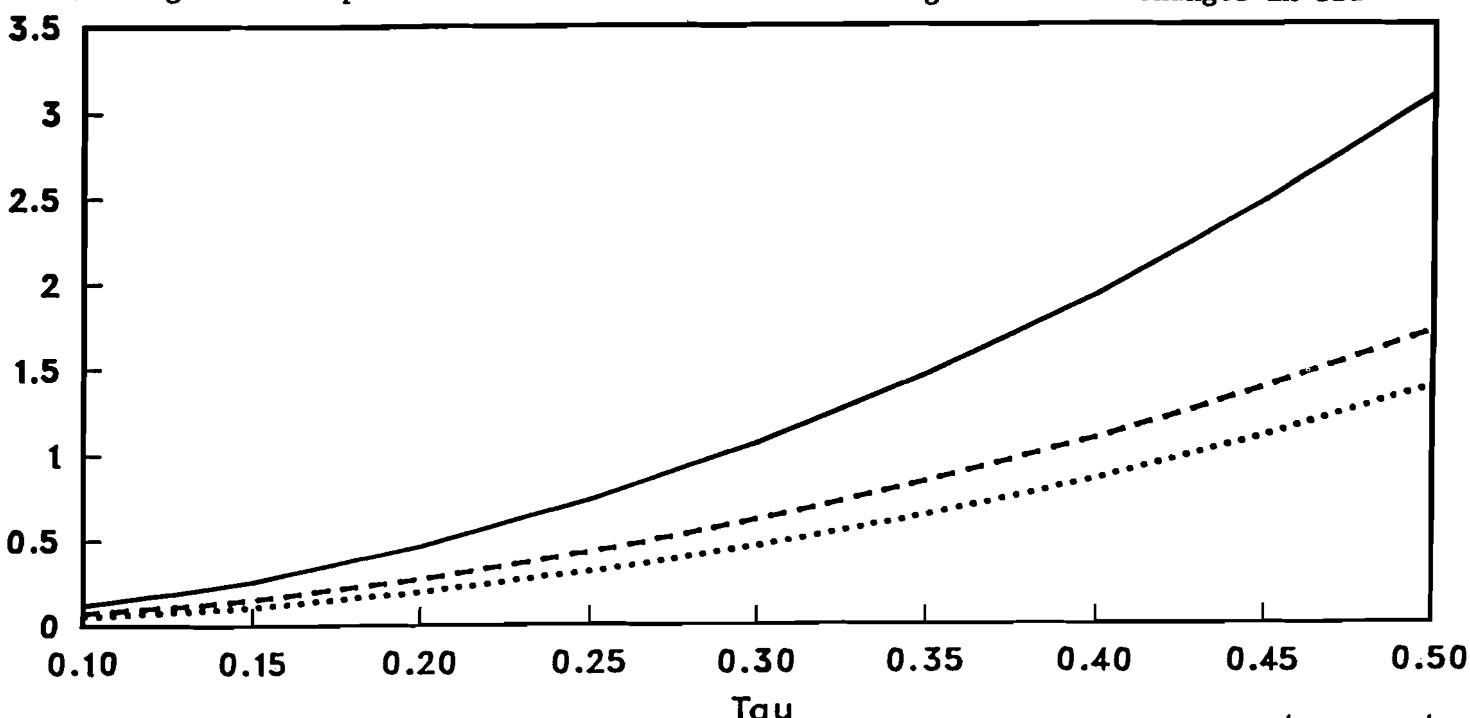
Source: Authors' calculations.

EB Figure 5: Response of Excess Burden as a Percentage of PVR to Changes in Theta



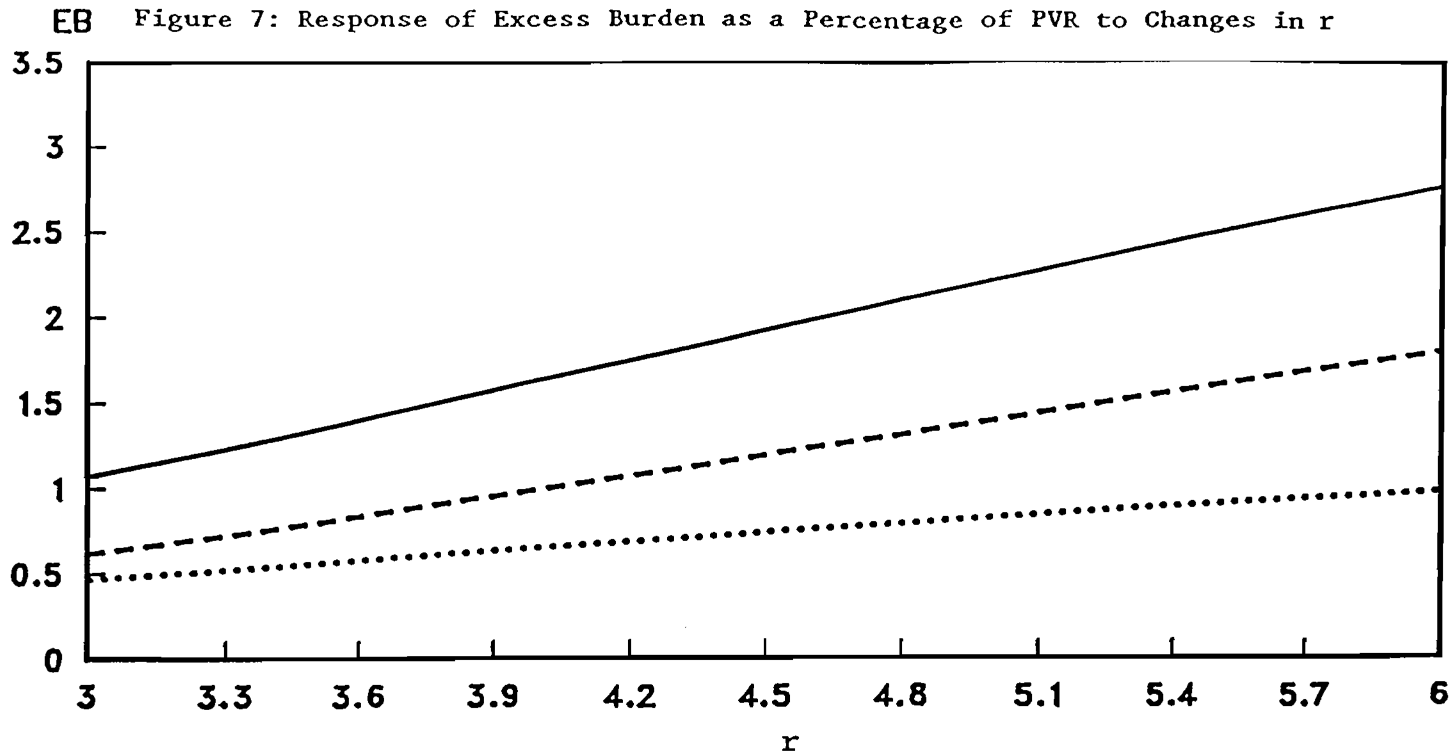
Source: Authors' calculations.

EB Figure 6: Response of Excess Burden as a Percentage of PVR to Changes in Tau



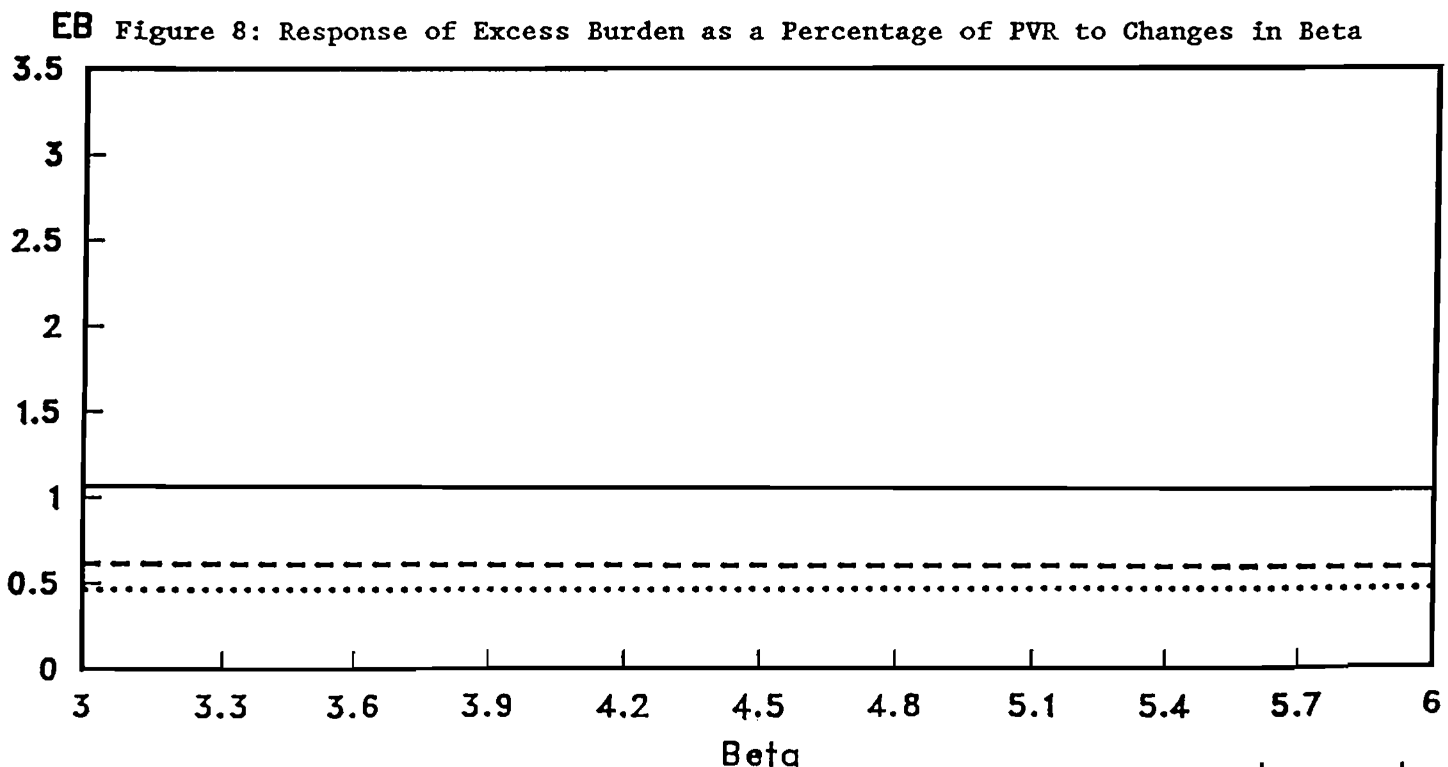
Source: Authors' calculations.

Figure 7: Response of Excess Burden as a Percentage of PVR to Changes in r



Source: Authors' calculations.

Figure 8: Response of Excess Burden as a Percentage of PVR to Changes in Beta



Source: Authors' calculations.

Legend

Static

Intertemporal

Combined

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