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The Elasticity of Taxable Income of Individuals in Couples*

John Creedy and Norman Gemmell†

Abstract

This paper examines the effect on the elasticity of taxable income for individuals in couples, where there is no income splitting for tax purposes but joint decisions are taken regarding taxable incomes. Two approaches are considered. First, the effects of minimising the total tax increase arising from a marginal rate increase are examines. Second, the paper considers the effects of joint utility maximisation.

JEL Classification:

Keywords: Income taxation; Taxable income; Elasticity of taxable income

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1 Introduction

The elasticity of taxable income, ETI, with respect to the net-of-tax rate (one minus the marginal tax rate faced) has attracted considerable attention because it captures all responses to a tax change, rather than, say, just the labour supply change, and is therefore important when considering the likely revenue effects of tax changes.[1] In addition, under certain strong assumptions it can be used to provide information about the welfare effects of a marginal rate change, and can thus contribute to the analysis of optimal income taxation.[2] However, its estimation presents a substantial challenge, largely arising from the fact that both taxable income and the marginal rate faced (in a multi-rate structure) are jointly determined and, in addition, a substantial amount of income mobility takes place that is not related to changes in income taxation.

The vast majority of studies use information about the taxable incomes and marginal rates facing an individual. In cases where couples are taxed jointly and income splitting occurs, both partners face a common marginal tax rate. In countries where individuals in couples are taxed separately, no consideration is usually given to the fact that some kind of joint-decision process may nevertheless be involved. However, individuals within households might be expected to respond to changes in other household members' marginal tax rates.[3] Where individuals in couples are taxed separately, it is usually not possible to obtain information about partners' incomes. A rare exception is the Swedish study by Gelber (2014), who modified the standard specification by adding terms involving changes in the partner's income and tax rate.

The present paper explores the implications of joint decision-making by couples and

[1] A seminal paper is Feldstein (1995). The properties and literature are reviewed by Saez, Slemrod and Giertz (2012), and an introduction is Creedy (2010).

[2] On the approach to optimal taxation using the ETI, see Saez (2001) and Creedy (2015). The modification needed in the case of income splitting for couples is examined by Bach, Corneo and Steiner (2011). The optimal taxation of couples is also examined by Kleven, Kreiner and Saez (2009), using the elasticity of taxable income concept.

[3] It may be thought that taxable income responses by one partner may give rise to income effects for the other partner (whose marginal rate may remain unchanged). However, the 'standard specification' does not allow for income effects. On a specification of income effects and tests in the New Zealand context, see Creedy, Gemmell and Teng. (2018), who found negligible effects.

the possible bias that may result from concentrating on individuals, in the context of individual (as opposed to joint) taxation of members of couples, so that there is not a common marginal tax rate. First, in order to clarify notation, Section 2 sets out the basic multi-step income tax schedule. Section 3 examines the case where couples attempt to minimise the increase in total taxation resulting from a change in one or both marginal tax rates. The context of joint utility maximisation is then examined in Section 4. Brief conclusions are in Section 5.

2 The Multi-step Income Tax

The multi-step tax function depends on a set of income threshold, $a_k, ..., a_K$, and a corresponding set of marginal tax rates $\tau_k, ..., \tau_K$. The tax paid by individual i with income of y is denoted $T(y) = T(y|\tau_1, ..., \tau_K, a_1, ..., a_K)$, and is given by:

$$\begin{aligned} T(y) &= \tau_1 (y - a_1) & & a_1 < y \leq a_2 \\ &= \tau_1 (a_2 - a_1) + \tau_2 (y - a_2) & & a_2 < y \leq a_3 \end{aligned} \tag{1}$$

and so on. If y falls into the kth tax bracket, so that $a_k < y \leq a_{k+1}$, $T(y)$ can be expressed for $k \geq 2$ as:

$$T(y) = \tau_k (y - a_k) + \sum_{j=1}^{k-1} \tau_j (a_{j+1} - a_j) \tag{2}$$

This can be rewritten as:

$$T(y) = \tau_k (y - a_k^*) \tag{3}$$

where:

$$a_k^* = \frac{1}{\tau_k} \sum_{j=1}^{k} a_j (\tau_j - \tau_{j-1}) \tag{4}$$

and $\tau_0 = 0$. It is convenient to define $z = y - a_k^*$, so that $T(y) = \tau_k z$.

Thus the tax function facing any individual taxpayer in the kth bracket is equivalent to a tax function with a single marginal tax rate, τ_k, applied to income measured in excess of a single effective threshold, a_k^*. Therefore, unlike a_j, a_k^* differs across individuals depending on the marginal income tax bracket into which they fall. Hence, when considering a number of individuals in the following sections, a subscript needs to be added to a_k^* as well as y.

3 Minimising Total Tax Increase

Consider a two-member family, with individuals indexed by subscripts 1 and 2, and facing the multi-step tax function above, levied on individual incomes separately. Faced with a tax reform that raises one or more tax rates, the couple could respond by minimising the increase in total tax liability $\sum_{i=1}^{2} T_i$, using T_i to denote $T(y_i)$.[4] Suppose that, before a tax reform, $y_1 > y_2$. The total tax liability of the couple is given by:

$$\begin{aligned} T &= \sum_{i=1}^{2} T_i = \sum_{i=1}^{2} \tau_{k,i} \left\{ y_i - a_{k,i}^* \right\} \\ &= \sum_{i=1}^{2} \tau_{k,i} z_i \end{aligned} \tag{5}$$

where, as above, $z_i = y_i - a_{k,i}^*$ is income in excess of the effective threshold.

Consider a reform involving an increase in the kth marginal, τ_k, which applies to incomes greater than y_2 but less than y_1. The response of the couples' total tax liability, $dT/d\tau_1$, is given, from (5), by:

$$\frac{dT}{d\tau_1} = z_1 + \left[\frac{\tau_1 dz_1 + \tau_2 dz_2}{d\tau_1} \right] \tag{6}$$

Here the k subscript is dropped to simplify the following expressions.

Thinking of the tax rate change as a 'price' change, $dz_1/d\tau_1$ can be thought of as an 'own-price' response of z, and $dz_2/d\tau_1$ regarded as a 'cross-price' response. Hence $dz_1/d\tau_1 < 0$, but $dz_2/d\tau_1 \gtreqless 0$,depending on whether the incomes of household members are 'complements' or 'substitutes'. For example, where a rise in τ_1 induces household member 1 to engage in search activities to enable increased avoidance, this may

[4] Alternatively, the couple may minimise the reduction in the household's net-of-tax income, $\sum_{i=1}^{2} \{y_i - T(y_i)\}$, by reducing or increasing gross income, $\sum_{i=1}^{2} y_i$, or reducing $\sum_{i=1}^{2} T(y_i)$, or re-allocating income across household members. This potentially includes responses that generate an increase in total net-of-tax income if income effects on gross income are sufficiently large. These cases are not examined here.

lead to a reallocation within the couple whereby $dz_2/d\tau_1 > 0$ (incomes are 'substitutes'). Or it may lead to avoidance discoveries for member 1 that can also be copied by member 2; hence $dz_2/d\tau_1 < 0$ (incomes are 'complements').

For the case where only z_1 responds to changes in τ_1, then (6) can be written as:

$$\eta_{T,\tau_1} = 1 + \eta_{z_1,\tau_1} \tag{7}$$

and the increase in tax liability is zero if $\eta_{z_1,\tau_1} = -1$. That is, household member 1 responds to a given percentage increase in the tax rate with an equal percentage reduction in income above 1's effective threshold.

Next consider the case where a fraction, β, of member 1's income is reallocated to member 2, whose pre-reform income is less than member 1 and who is not otherwise affected by the reform ($\beta = 1$ when income reallocation is the *only* behavioural response possible). Thus:

$$\frac{dz_2}{d\tau_1} = -\frac{\beta dz_1}{d\tau_1} \tag{8}$$

or equivalently:

$$\begin{aligned} \frac{\tau_1 dz_2}{z_2 d\tau_1} &= -\frac{z_1 \tau_1 \beta dz_1}{z_2 z_1 d\tau_1} \\ \eta_{z_2,\tau_1} &= -\beta \frac{z_1}{z_2} \eta_{z_1,\tau_1} \end{aligned} \tag{9}$$

For this 'reallocation option' case, (6) can be written as:

$$\frac{dT}{d\tau_1} = z_1 + (\tau_1 - \beta\tau_2)\frac{dz_1}{d\tau_1} \tag{10}$$

In elasticity form, this becomes:

$$\eta_{T,\tau_1} = \frac{T_1}{T}\left[1 + \left(\frac{(\tau_1 - \beta\tau_2)}{\tau_1}\right)\eta_{z_1,\tau_1}\right] \tag{11}$$

Since $\tau_1 > \tau_2$ and $\eta_{z_1,\tau_1} < 0$, then $\left(\frac{(\tau_1 - \beta\tau_2)}{\tau_1}\right)\eta_{z_1,\tau_1}$ is negative, capturing the total behavioural response. However, as equation (9) shows, this is composed of a reduction in z_1 in response to the rise in τ_1, but an increase in z_2. As expected, if both members initially face the same marginal tax rate, $\tau_1 = \tau_2$, there is no behavioural response via reallocation only ($\beta = 1$) that can reduce tax liability, and the total tax elasticity, η_{T,τ_1}, is determined entirely by the mechanical effect on member 1's tax liability, via T_1/T.

The couple succeeds in keeping a constant tax liability if $\eta_{T,\tau_1} = 0$, which can be shown from (9) to be equivalent to:

$$\frac{dT}{d\tau_1} = z_1 \left[1 + \frac{(\tau_1 - \beta\tau_2)}{\tau_1} \eta_{z_1,\tau_1} \right] = 0 \tag{12}$$

This yields the condition:

$$\eta_{z_1,\tau_1} = -\frac{\tau_1}{(\tau_1 - \beta\tau_2)} \tag{13}$$

and, from (9)

$$\eta_{z_2,\tau_1} = \frac{\tau_1 z_1}{(\tau_1 - \beta\tau_2) z_2} \tag{14}$$

Also, where person 2 has zero income prior to reform, or $\tau_2 = 0$, $\eta_{z_1,\tau_1} = -1$, and $\eta_{z_2,\tau_1} = z_1/z_2$. It would be possible to convert these expressions into ones involving elasticities expressed in terms of y rather than z, making an assumption that the individual does not change tax brackets as a result of the marginal rate change.

4 Utility Maximisation

This section turns to the case of utility maximisation. Subsection 4.1 rehearses the utility derivation of the standard elasticity of taxable income specification. Subsection 4.2 extends this to joint maximisation by a couple. Subsections 4.3 and 4.4 consider, in turn, an increase in one relevant rate (facing one of the members of the couple) and an increase in both relevant rates. A special case is explored in Subsection 4.5.

4.1 Single Individuals

This section presents the standard specification of the elasticity of taxable income. The emphasis is on the effect on an individual's declared income, y, from all sources, of a marginal income tax rate change. The approach is to consider an abbreviated form of utility function, in which utility is written simply as $U(c, y)$, where c is consumption. Declared taxable income, y, enters negatively, reflecting the cost, for example in leisure foregone, of obtaining it. The following discussion ignores consumption taxation, although a uniform tax, in the form of a general consumption tax (GST) can be introduced without difficulty. In the single-period framework, savings are ignored, so that net income and consumption are treated as being synonymous.

Any piecewise-linear tax structure can be expressed, for an individual facing a particular tax rate, as equivalent to a linear function where income is subject to that marginal rate above a threshold (which depends on other rates and income thresholds in the tax schedule), along with the intercept term (the value of consumption when taxable income is zero). This intercept term is also a function of various rates and thresholds, and is referred to as 'virtual income'. Thus consider an individual facing the marginal tax rate, τ, considered to apply to income measured above the income threshold, a^*. For those with $y > a^*$, the budget constraint is:

$$\begin{aligned} c &= \mu_v + y - \tau (y - a^*) \\ &= (\mu_v + \tau a^*) + y (1 - \tau) \end{aligned} \tag{15}$$

where μ_v depends on the nature of the tax and transfer structure, and the total income, y, of the individual: these components do not need to be considered explicitly. Hence, writing virtual income as $\mu = \mu_v + \tau a^*$, the budget constraint is written simply as:

$$c = \mu + y (1 - \tau) \tag{16}$$

The individual is assumed to maximise utility subject to the constraint in (16). A specification which has received much attention is the quasi-linear form:

$$U = c - \left(\frac{1}{1 + \frac{1}{\varepsilon}} \right) \left(\frac{y}{y_0} \right)^{1+\frac{1}{\varepsilon}} \tag{17}$$

where y_0 is income in the absence of income taxation. This form is attractive largely because it implies that income effects of marginal tax rate changes are not present, and the elasticity of taxable income – as seen below – is constant.

Setting $\frac{\partial U}{\partial y} = 0$ and solving for taxable income gives:

$$y = y_0 (1 - \tau)^{\varepsilon} \tag{18}$$

or in terms of log-changes:

$$d\log y = \varepsilon d\log\left(1-\tau\right) \tag{19}$$

Hence the elasticity of taxable income, $\eta_{y,1-\tau}$, is constant at ε. It is the linear term in c, and the absence of virtual income, μ, from the term involving y, which ensures that income effects are zero. Of course, in practice (19) is converted to discrete changes, to produce the starting point for regression analyses.

4.2 Couples: A Joint Utility Function

This section examines the joint maximisation of utility within couples.

Consider couples who share their income and maximise a joint utility function, although tax is based on individual incomes. The budget constraint, where subscripts 1 and 2 refer to the two individuals in the couple, is thus:

$$c = \mu_1 + y_1\left(1-\tau_1\right) + \mu_2 + y_2\left(1-\tau_2\right) \tag{20}$$

The joint utility function can be written, as an extension of the above, as:[5]

$$U = c - \left(\frac{1}{1+\frac{1}{\varepsilon_1}}\right)\left(\frac{y_1}{y_{1,0}}\right)^{1+\frac{1}{\varepsilon_1}}\left(\frac{1}{1+\frac{1}{\varepsilon_2}}\right)\left(\frac{y_2}{y_{2,0}}\right)^{1+\frac{1}{\varepsilon_2}} \tag{21}$$

The first-order condition for person 1's taxable income is:

$$\frac{\partial U}{\partial y_1} = \left(1-\tau_1\right) - \left(\frac{y_1}{y_{1,0}}\right)^{\frac{1}{\varepsilon_1}}\left(\frac{1}{1+\frac{1}{\varepsilon_2}}\right)\left(\frac{y_2}{y_{2,0}}\right)^{1+\frac{1}{\varepsilon_2}} = 0 \tag{22}$$

Then:

$$\left(\frac{y_1}{y_{1,0}}\right)^{\frac{1}{\varepsilon_1}} = \frac{\left(1-\tau_1\right)}{\left(\frac{1}{1+\frac{1}{\varepsilon_2}}\right)\left(\frac{y_2}{y_{2,0}}\right)^{1+\frac{1}{\varepsilon_2}}} \tag{23}$$

$$y_1 = y_{1,0}\left(1-\tau_1\right)^{\varepsilon_1}\left\{\left(\frac{1}{1+\frac{1}{\varepsilon_2}}\right)\left(\frac{y_2}{y_{2,0}}\right)^{1+\frac{1}{\varepsilon_2}}\right\}^{-\varepsilon_1} \tag{24}$$

[5] If the two components of U in (21) are additive, the income sharing has no effect on the solutions for z_1 and z_2.

Taking logarithms:

$$\log y_1 = \gamma_1 + \varepsilon_1 \log(1-\tau_1) - \left(\frac{\varepsilon_1}{1+\frac{1}{\varepsilon_2}}\right) \log y_2 \tag{25}$$

where:

$$\gamma_1 = \log y_{1,0} - \varepsilon_1 \log\left(\frac{1}{1+\frac{1}{\varepsilon_2}}\right) + \left(\frac{\varepsilon_1}{1+\frac{1}{\varepsilon_2}}\right) \log y_{2,0} \tag{26}$$

A similarly result arises for the second first-order condition for y_2, such that:

$$\log y_2 = \gamma_2 \; + \varepsilon_2 \log(1-\tau_2) - \left(\frac{\varepsilon_2}{1+\frac{1}{\varepsilon_1}}\right) \log y_1 \tag{27}$$

4.3 Changes in One Tax Rate

Suppose $y_1 > y_2$ and person 2 faces the lower marginal tax rate, so that $\tau_1 > \tau_2$. Differentiating (25) with respect to $\log(1-\tau_1)$ gives:

$$\frac{d\log y_1}{d\log(1-\tau_1)} = \varepsilon_1 - \left(\frac{\varepsilon_1}{1+\frac{1}{\varepsilon_2}}\right) \frac{d\log y_2}{d\log(1-\tau_1)} \tag{28}$$

However, the change in $\log y_2$ (in terms of the change in y_1) can be obtained from (27). Where τ_2 is unchanged, and it is assumed that the induced change in y_2 does not move person 2 into a different tax bracket:

$$\frac{d\log y_2}{d\log(1-\tau_1)} = - \left(\frac{\varepsilon_2}{1+\frac{1}{\varepsilon_1}}\right) \frac{d\log y_1}{d\log(1-\tau_1)} \tag{29}$$

While person 1 reduces y_1 as a consequence of an increase in τ_1, this shows that person 2 increases y_2 as part of the joint decision. The elasticities, $\eta_{y_2,1-\tau_1}$ and $\eta_{y_1,1-\tau_1}$ are proportional and involve movements in opposite directions.

Substituting for $\frac{d\log y_2}{d\log(1-\tau_1)}$, using (29), into (28) gives:

$$\frac{d\log y_1}{d\log(1-\tau_1)} = \varepsilon_1 + \frac{\varepsilon_1\varepsilon_2}{\left(1+\frac{1}{\varepsilon_2}\right)\left(1+\frac{1}{\varepsilon_1}\right)} \frac{d\log y_1}{d\log(1-\tau_1)} \tag{30}$$

and hence the elasticity of taxable income for person 1 is:

$$\eta_{y_1,1-\tau_1} = \frac{d\log y_1}{d\log(1-\tau_1)} = \varepsilon_1 \left[1 - \frac{\varepsilon_1\varepsilon_2}{\left(1+\frac{1}{\varepsilon_2}\right)\left(1+\frac{1}{\varepsilon_1}\right)}\right]^{-1} \tag{31}$$

and, letting k_1 equal the term on the right hand side of (31):

$$d\log y_1 = k_1 d\log(1-\tau_1) \tag{32}$$

This, of course, is the standard equation that is typically used as the starting point for estimating the elasticity of taxable income for individuals. However, the elasticity of taxable income for person 1 is higher than for a corresponding single person. For example, if $\varepsilon_1 = \varepsilon_2 = 0.5$, the elasticity in (31) is 3 per cent higher than the individual elasticity (0.5143 compared with 0.5).

The reduction in y_1 as a consequence of an increase in τ_1 is larger than it would otherwise be (if person 1 were single), but the fall in consumption is partly compensated by an increase in y_2. This change must of course be considered when examining changes in total tax revenue.

The fact that y_1 and y_2 move in opposite directions when just one tax rate changes also implies that when τ_2 changes, and τ_1 remains fixed, person 1 increases taxable income. This may at first seem paradoxical, but if the change arises from labour supply variations, an increase in y_1 may involve only a small increase in hours worked for person 1, while the reduction in y_2 may involve a larger decrease in hours worked. This is optimal in this case of joint decision-making and the assumption that total consumption additively enters the joint utility function (the actual degree of sharing of net income is not relevant). In this model, where there are no income effects (because of the quasi-concavity of the utility function), a change in $\tau_2 < \tau_1$ has no direct effect on person 1. It can be seen that:

$$\eta_{y_2,1-\tau_2} = \frac{d\log y_2}{d\log(1-\tau_2)} = \varepsilon_2 \left[1 - \frac{\varepsilon_1\varepsilon_2}{\left(1+\frac{1}{\varepsilon_2}\right)\left(1+\frac{1}{\varepsilon_1}\right)}\right]^{-1} \tag{33}$$

so that the elasticity $\eta_{y_2,1-\tau_2}$ is ε_2, adjusted by the same proportion that applies to $\eta_{y_1,1-\tau_1}$. The change in total tax revenue must again allow for the consequent change in y_1, via:

$$\frac{d\log y_1}{d\log(1-\tau_2)} = -\left(\frac{\varepsilon_1}{1+\frac{1}{\varepsilon_2}}\right)\frac{d\log y_2}{d\log(1-\tau_2)} \tag{34}$$

The result that $\eta_{y_1,1-\tau_1} > \varepsilon_1$ suggests that separate regressions should be run for single individuals and members of couples.

4.4 Changes in Two Tax Rates

The above result can be extended to the case where both tax rates change. This means that (28) can be written as:

$$\frac{d\log y_1}{d\log(1-\tau_1)} = \varepsilon_1 - \left(\frac{\varepsilon_1}{1+\frac{1}{\varepsilon_2}}\right)\frac{d\log y_2}{d\log(1-\tau_2)}\frac{d\log(1-\tau_2)}{d\log(1-\tau_1)} \tag{35}$$

and similarly:

$$\frac{d\log y_2}{d\log(1-\tau_2)} = \varepsilon_2 - \left(\frac{\varepsilon_2}{1+\frac{1}{\varepsilon_1}}\right)\frac{d\log y_1}{d\log(1-\tau_1)}\frac{d\log(1-\tau_1)}{d\log(1-\tau_2)} \tag{36}$$

Substituting (36) into (35) and rearranging gives:

$$\frac{d\log y_1}{d\log(1-\tau_1)}\left[1-\frac{\varepsilon_1\varepsilon_2}{\left(1+\frac{1}{\varepsilon_2}\right)\left(1+\frac{1}{\varepsilon_1}\right)}\right] = \varepsilon_1 - \left(\frac{\varepsilon_1\varepsilon_2}{1+\frac{1}{\varepsilon_2}}\right)\frac{d\log(1-\tau_2)}{d\log(1-\tau_1)} \tag{37}$$

It can be seen that if τ_2 is unchanged, (37) reduces to (31). The expression in (37) can also be written as:

$$d\log y_1 = k_1 d\log(1-\tau_1) - k_2 d\log(1-\tau_2) \tag{38}$$

where, as above, k_1 is given by:

$$k_1 = \varepsilon_1\left[1-\frac{\varepsilon_1\varepsilon_2}{\left(1+\frac{1}{\varepsilon_2}\right)\left(1+\frac{1}{\varepsilon_1}\right)}\right]^{-1} \tag{39}$$

and:

$$k_2 = \left(\frac{\varepsilon_1\varepsilon_2}{1+\frac{1}{\varepsilon_2}}\right)\left[1-\frac{\varepsilon_1\varepsilon_2}{\left(1+\frac{1}{\varepsilon_2}\right)\left(1+\frac{1}{\varepsilon_1}\right)}\right]^{-1} \tag{40}$$

The form in (38) turns out to be a simple extension of the expression typically used as the starting point for estimating the elasticity of taxable income for individuals. A similar result arises for changes in y_2. Hence, given appropriate data for each individual member of a couple, the estimation of (38) could proceed using one of the approaches suggested in the literature and designed to deal with the endogeneity problem that arises in nonlinear tax structures.

The ks are of course the elasticities, $\eta_{y_1,1-\tau_1}$ and $\eta_{y_2,1-\tau_1}$. Separate estimation of the εs would in general not be required, although these could be recovered from estimates of the ks, as follows. Write:

$$\xi = \frac{k_1}{k_2} = \frac{1+\frac{1}{\varepsilon_2}}{\varepsilon_2} \tag{41}$$

The coefficient, ε_2, can be obtained as the appropriate root of the quadratic:

$$\xi\varepsilon_2^2 - \varepsilon_2 - 1 = 0 \tag{42}$$

Further, using the expression for k_1, and the solution for ε_2, the coefficient, ε_1, can also be obtained as the root of another quadratic function, given by:

$$\left(1 + \frac{k_1\varepsilon_2}{1+\frac{1}{\varepsilon_2}}\right)\varepsilon_1^2 + (1-k_1)\,\varepsilon_1 - k_1 = 0 \tag{43}$$

The separate parameters, ε_1 and ε_2, can therefore be recovered from estimation of (38).

4.5 A Special Case of Income Shifting

Consider the special case where adjustments to taxable income take place by changing the incomes of the two members of the couple such that $dy_2 = -dy_1$. This maintains constant total taxable income, but an effective shifting of some income to a lower-taxed source (although this case does not satisfy the first-order conditions for joint utility maximisation since (27) is not satisfied). Using $d\log y = dy/y$ substitution into (28) gives:

$$\frac{d\log y_1}{d\log(1-\tau_1)} = \varepsilon_1 + \left(\frac{\varepsilon_1}{1+\frac{1}{\varepsilon_2}}\right)\frac{d\log y_1}{d\log(1-\tau_1)}\left(\frac{y_1}{y_2}\right) \tag{44}$$

Hence in this special case:

$$\frac{d\log y_1}{d\log(1-\tau_1)} = \frac{\varepsilon_1}{1-\left(\frac{\varepsilon_1}{1+\frac{1}{\varepsilon_2}}\right)\left(\frac{y_1}{y_2}\right)} \tag{45}$$

The ETI is this case much higher. For example, where, as above, $\varepsilon_1 = \varepsilon_2 = 0.5$ and $y_1/y_2 = 2$, the elasticity of taxable income for person 1 is 0.75. If $\varepsilon_2 = 0.2$ instead, the ETI for person 1 is reduced to 0.6.

5 Conclusions

This paper has examined the complications which arise when considering taxable income responses to changes in marginal income tax rates in the context of couples, rather than individual independent taxpayers, in the case where there is no income splitting, so that the basic income unit for tax purposes is the individual. Expressions are obtained which modify the individual elasticity of taxable income, where couples are assumed to minimise the change in total tax payable. In addition, the utility maximisation approach, used to derive the standard specification for the elasticity of taxable income, is extended to deal with couples who are assumed to maximise a joint utility function.

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