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The Taxation of Married Couples in OECD Countries: A Need for Reform?

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THE TAXATION OF MARRIED COUPLES IN OECD COUNTRIES: A NEED FOR REFORM?*

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Abstract

This paper evaluates the tax treatment of married couples in OECD countries. While the existing literature has emphasized the relation between marginal taxes and hours of work, the novelty of our analysis is the incorporation of labor force participation responses. Indeed, the modern empirical labor market literature demonstrates that the observed difference in labor supply elasticities between spouses arises mainly because of a strong participation effect for the secondary earner. The distortion of entry-exit behavior is determined by the total tax burden on labor income and therefore by the average – rather than the marginal – rate of taxation. Accordingly, the efficient tax system involves relatively low average tax burdens for secondary earners in order to avoid discrimination against their participation in the labor market. However, our calculations of effective tax rates for married spouses reveal that the average tax burden of secondary earners is higher than that of primary earners in most of the OECD area, including countries where the framework is one of individual filing. Reforms which shift the tax burden from the secondary to the primary earner would generate substantial welfare gains across all countries. (*JEL* H21, J22, D10)

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1 Introduction

The tax treatment of married couples has been a debating point throughout the existence of the income tax. Actual policies have varied over time and across countries. In recent decades there has been an international trend from joint to individual taxation of husbands and wives, and today the majority of OECD countries use the individual as the basic unit of taxation. Under individual-based taxation, due to the progressivity of the income tax, the secondary earner faces a lower tax rate than the primary earner. This is exactly the kind of policy recommended by the optimum tax literature, see for example Boskin and Sheshinski (1983). They demonstrate that a Ramsey-type argument calls for a lower marginal tax rate for secondary earners because their labor supply is more elastic than that of primary earners.

The existing literature has focused solely on labor supply responses along the intensive margin, i.e., hours of work for those who are working. Labor supply responses along the extensive margin – at the margin of entry and exit – are not included in the analysis. This is at variance with the modern empirical labor market literature which emphasizes the importance of distinguishing between the two margins of response. Today the consensus view is that hours-of-work effects tend to be modest for both husbands and wives, see e.g. Heckman (1993) and Blundell and MaCurdy (1999). The responsiveness of labor force participation, on the other hand, may be very high for certain subgroups of the population, in particular for secondary earners. The estimated participation elasticities for secondary earners tend to be concentrated in the interval from $1/2$ to 1, while for primary earners the elasticity is close to zero.

As this paper will demonstrate, these empirical insights call for a reconsideration of the tax treatment of married couples, in theory and in practice. At the theoretical level, the distortion of labor force participation is related to a different tax wedge than the one distorting hours of work.

While working hours depend on the marginal rate of taxation, entry-exit decisions are influenced by the total tax burden on labor income and therefore the average rate of taxation. Intuitively, since the observed elasticity differential between spouses is mainly due to participation effects, the Ramsey argument calls for a lower average tax rate for secondary earners. At the more practical level, the average tax burdens of primary vis-à-vis secondary earners may be very different from their marginal tax burdens. Once we begin to consider the allocation of average tax burdens, it turns out that the tax treatment of married couples is highly inefficient all across the OECD area, for countries operating joint and individual filing alike.

For the purpose of measuring the effect on efficiency of shifting the tax burden between married spouses, we calculate effective marginal and average tax rates for 23 OECD countries. In a majority of countries, the marginal tax rate of secondary earners is lower than that of primary earners, reflecting the widespread use of individual filing. The picture is quite different for average taxes, as already alluded to, where most countries discriminate against secondary earners. In fact, the average tax burden for secondary earners is higher than for primary earners in two-thirds of all countries. While this is what we would expect for countries operating joint filing, like the United States, it is more surprising that the secondary earner also bears a higher tax burden in many countries operating progressive individual taxation. The explanation is that most countries, although their formal framework may be one of individual taxation, have retained large elements of jointness in the granting of allowances and credits. We are thinking of, e.g., the transfer of unutilized allowances between spouses, dependent spouse rebates, and child reliefs depending on the combined income of spouses.

The presence of a relatively high tax burden for the household member whose labor force participation is most responsive creates a scope for policy reform. Even for conservative elas-

ticities, a tax shift from the secondary to the primary earner would generate a substantial welfare gain in all the OECD countries in our sample. Consider for example a scenario where the participation elasticity for primary earners is set equal to 0.1, while for secondary earners the elasticity is 0.5. In this case, a one-dollar tax shift away from the secondary earner would generate a welfare gain above 10 dollars in Germany and Belgium. These rather extreme effects reflect that the taxation of secondary earners is quite close to the maximum of the Laffer curve. In the rest of OECD, the effects are smaller because there is less initial discrimination against secondary earners and/or because the general tax level is more moderate. Yet, the potential welfare gains from a one-dollar tax shift are quite large: for example 1.17 dollars in Sweden, 91 cents in Italy, 81 cents in France, 56 cents in Canada, and 43 cents in the United States. A more efficient tax policy is that of the United Kingdom where the taxation of secondary earners is quite lenient, although even here there is a gain of 18 cents to be reaped from the reform.

A couple of remarks on the relation to the existing literature are warranted. A number of recent papers study the taxation of married couples in models incorporating household production, see Piggott and Whalley (1996, 1999), Apps and Rees (1999a), Gottfried and Richter (1999), and Kleven and Kreiner (2001). This literature demonstrates that the presence of household production activities weakens the case for selective marginal tax rates within the family, because such a tax system distorts the use of labor input in household production. Although this research stresses the importance of accounting for household production, its incorporation into the analysis seems to be less urgent in our context. The additional effects created by such an extension is related to marginal tax rates and hours-of-work decisions, while our conclusions regarding average tax burdens and labor force participation would survive.

Moreover, our paper adopts a standard household utility function approach where the family

is regarded as an income-pooling unit. Recent research casts some doubt on this approach and proposes instead the so-called collective model of labor supply, e.g. Apps and Rees (1988, 1999b) and Chiappori (1992). In particular, our formulation is unable to deal with issues concerning the intra-household distribution of resources, although this is most likely to be affected by the policy choices which we consider. Apps and Rees (1988) demonstrate that such considerations would matter for the welfare effect of tax reform if there is dissonance between the intra-family distributional outcome and the preferences of the policy-maker. Say, for example, that the policy-maker would like to see a reallocation of income towards the secondary earner, typically the woman. In this case, a tax shift from the secondary earner to the primary earner would generate distributional welfare gains over and above those estimated in the present paper.

The paper is organized in the following way. Section 2 sets up a theoretical framework incorporating intensive as well as extensive labor supply responses. Section 3 briefly reviews the empirical evidence on participation responses, while Section 4 describes the tax treatment of married couples in OECD countries. Section 5 calculates the welfare gain of tax reform and, finally, Section 6 concludes.

2 The Theoretical Framework

Following the household utility function approach, we consider the family to be the decision making unit and assume that behavior is determined by the maximization of a family utility function. Each family consists of two individuals, a primary earner (p) and a secondary earner (s), who differ in their preferences for work as well as in their market productivities. In addition, the model incorporates heterogeneity across individuals of different families, arising because of varying fixed costs of working. We consider a continuum of households indexed by (ω_p, ω_s) ,

where ω_p and ω_s denote the fixed cost of the primary and the secondary earner, respectively. It is assumed that these fixed costs are distributed according to the joint density function $g(\omega_p, \omega_s)$. The welfare of each family is represented by a quasi-linear utility function,

$$u(\omega_p, \omega_s) = I(\omega_p, \omega_s) - d_p(\omega_p) - d_s(\omega_s), \quad (1)$$

where I is net income of the family and d_i is the disutility of working. The disutility terms are given by

$$d_i(\omega_i) = \begin{cases} \omega_i + v_i(h_i(\omega_i)) & \text{for } h_i(\omega_i) > 0 \\ 0 & \text{for } h_i(\omega_i) = 0 \end{cases} \quad i = p, s, \quad (2)$$

where $v'_i > 0$ and $v''_i < 0$. This expression decomposes the cost of labor market participation into the fixed cost, ω_i , as well as a variable cost depending on the number of working hours, $h_i(\omega_i)$. In the case of non-participation, disutility is zero. The net income of the family is equal to

$$I(\omega_p, \omega_s) = w_p h_p(\omega_p) - T_p(w_p h_p(\omega_p), z_p) + w_s h_s(\omega_s) - T_s(w_s h_s(\omega_s), z_s), \quad (3)$$

where w_p and w_s denote the wage rates of the two spouses, while $T_p(\cdot)$ and $T_s(\cdot)$ are their net payments to the public sector, embodying both taxes and transfers. Each tax function depends on a z -parameter which represents policy reform. The tax scheme may be proportional, progressive, or regressive, and it may involve non-linearities. Attention is restricted, however, to the case of piecewise linearity such that marginal tax rates are locally constant.

The household maximizes (1) subject to (2) and (3). Given participation, i.e. $h_i(\omega_i) > 0$, the optimum is characterized by

$$(1 - m_i) w_i = v'_i(l_i) \quad i = p, s, \quad (4)$$

where l_i denotes the optimal number of working hours for a participating worker, and $m_i \equiv \partial T_i(w_i l_i, z_i) / \partial (w_i l_i)$ is the marginal tax rate. The individual labor supply function, if working, is thus given by $l_i = l_i((1 - m_i) w_i)$ for all ω_i . But for the individual to enter the labor market in the first place, the utility from participation must be greater than or equal to the utility from non-participation. This gives the following participation constraint

$$\omega_i \leq w_i l_i - T_i(w_i l_i, z_i) - v_i(l_i) \equiv \tilde{\omega}_i \quad i = p, s. \quad (5)$$

In this expression the net tax payment of those outside the labor force has been normalized to zero, i.e. $T_i(0, z_i) = 0$, implying that the tax burden on the insiders should be thought of as the incremental payment following labor market entry.¹ Individuals with a fixed cost below the threshold-value $\tilde{\omega}_i$, defined in the above expression, decide to work l_i hours while those with a fixed cost above the threshold choose to stay outside the labor force. Notice that the participation constraint depends on the total tax burden and therefore the average rate of taxation, whereas hours of work for those who are working, determined by eq. (4), is related to the marginal rate of taxation.

The fraction of secondary earners who decide to participate in the labor market is given by $G_s(\tilde{\omega}_s) \equiv \int_0^{\tilde{\omega}_s} \int_0^\infty g(\omega_s, \omega_p) d\omega_p d\omega_s$, and likewise for primary earners. The aggregate labor supply of primary and secondary earners, respectively, thus becomes

$$L_i = \int_0^\infty \int_0^\infty h_i(\omega_i) g(\omega_i, \omega_j) d\omega_j d\omega_i = l_i((1 - m_i) w_i) G_i(\tilde{\omega}_i) \quad i = p, s, \quad (6)$$

where we have normalized the population of families to one. Aggregate labor supply is a product of hours of work for those who are working and the labor force participation rate. The elasticity

¹In principle, the participation constraint depends on the difference in net payments, i.e. $T_i(w_i l_i, z_i) - T_i(0, z_i)$. Typically, $T_i(0, z_i)$ would be negative since those outside the labor market are entitled to various government benefits. Accordingly, with the above normalization, the tax burden in equation (5) should be thought of as including transfers which are foregone in connection with entry.

of aggregate labor supply with respect to the wage rate is equal to the sum of the hours-of-work elasticity, η_i , and the participation elasticity, δ_i , i.e.

$$\frac{\partial L_i/L_i}{\partial w_i/w_i} = \frac{\partial l_i/l_i}{\partial w_i/w_i} + \frac{\partial G_i/G_i}{\partial w_i/w_i} = \eta_i + \delta_i \quad i = p, s. \quad (7)$$

The hours-of-work elasticity is given by

$$\eta_i = (1 - m_i) w_i l'_i / l_i \quad i = p, s, \quad (8)$$

while the participation elasticity equals

$$\delta_i = G'_i(\tilde{\omega}_i) \frac{\partial \tilde{\omega}_i}{\partial w_i} \frac{w_i}{G_i(\tilde{\omega}_i)} = \frac{G'_i(\tilde{\omega}_i) (1 - m_i) w_i l_i}{G_i(\tilde{\omega}_i)} \quad i = p, s, \quad (9)$$

where the derivation of the last expression uses eqs (4) and (5).

To study the effect of tax reform on efficiency, we derive aggregate utilitarian welfare by integrating the utility function (1) over households, i.e.

$$U = \int_0^\infty \int_0^\infty [I(\omega_p, \omega_s) - d_p(\omega_p) - d_s(\omega_s)] g(\omega_p, \omega_s) d\omega_p d\omega_s. \quad (10)$$

Now, consider a policy reform which alters the taxation of spouse i , represented by a marginal change in z_i . In general, the reform may change both the marginal rate of taxation and the average rate of taxation. The effect on welfare is given by (see Appendix A)

$$\frac{dU}{dz_i} = -\frac{\partial a_i}{\partial z_i} w_i L_i, \quad (11)$$

where $a_i \equiv T_i(w_i l_i, z_i) / (w_i l_i)$ denotes the average tax rate and $\frac{\partial a_i}{\partial z_i} = \frac{\partial T_i}{\partial z_i} / (w_i l_i)$ measures the amount by which the reform changes the average tax rate. Due to quasi-linearity, the above expression measures the effect on welfare in monetary units. A more relevant measure, however, is the welfare effect in (11) per additional dollar of tax revenue, typically labelled the marginal

cost of public funds (MCF). In algebra,

$$MCF_i = -\frac{dU/dz_i}{dT/dz_i},$$

where T denotes aggregate tax revenue, which is given by

$$T = \int_0^\infty \int_0^\infty [T_p(w_p h_p(\omega_p), z_p) + T_s(w_s h_s(\omega_s), z_s)] g(\omega_p, \omega_s) d\omega_p d\omega_s. \quad (12)$$

The effect on revenue of a change in z_i equals (see Appendix B)

$$\frac{dT}{dz_i} = \left[\frac{\partial a_i}{\partial z_i} - \frac{m_i}{1-m_i} \frac{\partial m_i}{\partial z_i} \eta_i - \frac{a_i}{1-m_i} \frac{\partial a_i}{\partial z_i} \delta_i \right] w_i L_i. \quad (13)$$

The direct effect of raising the average tax rate for one of the spouses is of course to collect more revenue, reflected by the first term in the expression. However, there are feedback effects from both the intensive and the extensive margin. The second term reflects that those participating in the labor market reduce their hours of work because of a higher marginal tax rate. Moreover, some people choose to quit their jobs because of the higher average tax rate, as indicated by the last term. Inserting dU/dz_i and dT/dz_i in the MCF measure gives

$$MCF_i = \frac{1}{1 - \frac{m_i}{1-m_i} \Phi_i \eta_i - \frac{a_i}{1-m_i} \delta_i} \quad i = p, s, \quad (14)$$

where $\Phi_i \equiv \frac{\partial m_i / \partial z_i}{\partial a_i / \partial z_i}$ is a measure of the progressivity of the reform. The implication of accounting for participation responses is reflected by the last term in the denominator, while the remaining part of the expression is the ‘standard’ effect operating through the intensive margin. The standard effect depends on the marginal tax rate, the progressivity of the reform, and the hours-of-work elasticity. The magnitude of the participation effect, on the other hand, is related to the average tax rate and the participation elasticity.²

²Our measure for the MCF may be compared to the existing literature – surveyed by e.g. Dahlby (1998) – by setting the participation elasticity equal to zero. In this special case, we obtain e.g. Browning (1987, eq. 11).

Notice that the assumption of quasi-linear utility eliminates any income effects from taxation on the hours of work. This assumption is innocent in the following analysis, which deals with the allocation of tax burden between spouses. In the household utility approach adopted here, income effects are non-existent as long as the level of the family’s overall tax burden is kept constant.

The difference in the MCFs for the two spouses, $MCF_s - MCF_p$, measures the efficiency effect of a reform which shifts one dollar of tax burden from the secondary to the primary earner. In the optimal tax system it is not possible to reap a welfare gain through such a tax shift, in other words, the MCFs are identical for the two spouses, $MCF_p = MCF_s$. The previous literature has analyzed optimal taxation where each spouse faces his/her own proportional tax system, implying $a_i = m_i \equiv t_i$ and $\Phi_i = 1$ for $i = p, s$. In this special case, we obtain the following optimality condition

$$\frac{t_p / (1 - t_p)}{t_s / (1 - t_s)} = \frac{\eta_s + \delta_s}{\eta_p + \delta_p}. \quad (15)$$

This policy rule is reminiscent of the Boskin and Sheshinski (1983) result that we should differentiate the taxation of married spouses according to their labor supply elasticities. There is a subtle difference, however, in that our version of the optimality condition discerns hours-of-work responses from participation responses. The formula thus emphasizes that taxation should be differentiated according to aggregate elasticities including both margins of labor supply response.

More importantly, the assumption of proportional taxation underlying formula (15) excludes welfare enhancing reforms which involve non-uniform changes of average and marginal tax rates. This is important in the present context where marginal and average taxes operate through different margins of labor supply response. The main focus of our paper will be on reforms which shift the average tax burden between husbands and wives without altering their marginal tax rates, i.e. $\Phi_i = 0$. This could be thought of as an adjustment in some of the special tax allowances and credits for married couples discussed in the Introduction. Such reforms would of course have no impact in the standard analysis where labor supply responses along the extensive

margin are ignored. In our analysis, on the other hand, we get

$$MCF_i = \frac{1}{1 - \frac{\alpha_i}{1-m_i} \delta_i} \quad i = p, s, \quad (16)$$

reflecting the participation response for each spouse. If the MCF measure in eq. (16) is not the same for the two partners, due to different tax rates and/or participation elasticities, we may obtain a welfare gain by shifting tax allowances between them. The optimal structure of average tax rates – for given marginal tax rates – is determined by the equality of MCFs, i.e.,

$$\frac{\alpha_p}{\alpha_s} = \frac{1 - m_p}{1 - m_s} \frac{\delta_s}{\delta_p} \quad \Leftrightarrow \quad \frac{\alpha_p}{\alpha_s} = \frac{\delta_s}{\delta_p}, \quad (17)$$

where $\alpha_i \equiv a_i / (1 - m_i)$. This formula demonstrates that a relatively high participation elasticity for secondary earners, *ceteris paribus*, implies that they should be subject to low average tax burdens. If the optimality condition is not satisfied, there is scope for welfare gains through the shifting of tax burden between spouses. Using evidence on participation elasticities as well as information on average and marginal tax rates, eqs (16) and (17) may form the basis for an evaluation of the taxation of married couples. The remaining part of the paper is devoted to this exercise.

3 Empirical Evidence on Participation Responses

It has long been recognized that the labor supply of secondary earners (typically the wife) is more elastic than that of primary earners (typically the husband). However, the early studies did not distinguish between labor supply responses along the intensive margin and along the extensive margin. Consequently, as pointed out by Heckman (1993), the early estimates of married female labor supply as much more wage elastic than male labor supply arose partly because participation elasticities for women were being compared with hours-of-work elasticities

for men. More recent work, surveyed by Blundell and MaCurdy (1999), has indicated that the hours-of-work effect is small for both husbands and wives and, accordingly, that the observed difference in labor supply elasticities arises mainly because of a strong participation effect for the female.

This view is confirmed by a number of studies of the Negative Income Tax experiments in the United States, surveyed by e.g. Robins (1985). These studies demonstrate that participation responses are small for married men, whereas the elasticities for married women tend to be much larger, typically in excess of 0.5 and sometimes close to unity. For example, in Ashenfelter's (1978) study of the experiments in Iowa and North Carolina, the elasticities for married males and females are 0.2 and 0.9, respectively.

More recently, studies of the Tax Reform Act of 1986 find that the expansion of the EITC has had large effects on female labor force participation. For married women in the very top of the earnings distribution, Eissa (1995) reports a participation elasticity of 0.4. Moreover, the papers of Eissa and Liebman (1996) and Meyer and Rosenbaum (2001) find large effects on the labor force participation of single women, especially for those with low education. This gives further indication that participation responses tend to be substantial for low-income earners.

Non-experimental evidence for both the United States and Europe has reached similar conclusions (Mroz, 1987; Triest, 1990; Van Soest, 1995; Van Soest *et al.*, 2002). Triest (1990) estimates that the participation elasticity for married women in the United States lies in the interval from 0.6 to 1.1. For the Netherlands, Van Soest (1995) finds that the labor supply elasticity for males lies in the interval from 0.1 to 0.2, while the elasticity for females lies in the range from 0.5 to 1.0. Although these elasticities include the effect on both participation and hours, Van Soest's calculations reveal that the principal effect comes through the participation

response. A more recent study by Van Soest *et al.* (2002) suggests that the participation elasticity for married women lies in the range from 0.5 (for those with high education) to 0.8 (for those with low education).

To summarize the literature, the participation elasticity for primary earners is small (perhaps around 0.1), while for secondary earners the estimates tend to be concentrated in the interval from 1/2 to 1. This implies that the elasticity ratio δ_s/δ_p which enters the optimality formula (17) is at least 5 and may be considerably higher.

4 The Taxation of Married Couples in OECD Countries

For the purpose of evaluating the taxation of the family, we have used OECD (2000, 2001) statistics to calculate effective average and marginal tax rates for married people in 23 OECD countries. We consider the tax position of a married couple with two children. The income of the primary earner corresponds to that of an average production worker (APW), while the secondary earner's income is one-third of APW-income.³ The tax rates include all taxes which reduce the net consumer wage below the marginal product of labor, i.e., income taxes, employees' and employer's compulsory social security contributions, payroll taxes, and consumption taxes. Moreover, the tax rates account for the impact of various tax reliefs. This includes standard reliefs which are granted irrespective of actual expenses incurred by the taxpayer as well as certain reliefs for work-related expenses. Particularly important in our context are those reliefs relating to marital status or to the income level or labor force participation of a married partner (cf. below).

The OECD data contains information about the combined tax burden of married couples.

³In the end of the next section, we shall consider an alternative scenario where the income of the secondary earner is two-thirds of APW-income.

In order to separate the tax burden between spouses, we have to make an assumption about the sequence of labor market entry. It is natural to assume that the primary earner enters first, while the secondary earner makes his/her entry decision conditional on the labor force participation of the spouse. Accordingly, the tax burden of the primary earner may be calculated as that which would apply for the whole family if the spouse had no labor income. The secondary earner's tax liability is given by the increase in the family's tax liability resulting from the second entry.

In principle, the average tax rates should reflect the incremental net payment to the public sector following labor market entry. In addition to taxes, this includes government transfers which are foregone in connection with entry, i.e., UI benefits, social assistance, and other cash benefits. Although OECD does report various measures of replacement ratios, their incorporation into the analysis is problematic. Specifically, the replacement ratios are overestimated for our purpose as they do not account for eligibility rules (relating to the spouse's income, wealth, etc.) and because of different forms of workfare requirements which reduce the utility of the benefit recipient. For these reasons, we exclude transfers from the analysis and focus solely on the tax system. In the end of the next section, it will be argued that the exclusion of transfers is unlikely to bias our conclusions.

Table I displays marginal and average tax rates and, in the last column, whether the tax unit is the individual (Ind), the couple (Joint), or optional (Opt). Generally, the marginal tax rates of primary earners tend to be higher than those of the secondary earners. In fact, for two-thirds of the countries the marginal rate is strictly higher for the primary earner. This reflects that a majority of countries operate progressive, individual taxation, where the spouse with the highest income is placed in a higher tax bracket. Indeed, the literature on the optimal taxation of married couples has advocated individual filing exactly because it ensures a relatively high

marginal tax rate for the primary earner.

< Table I >

For average taxes, however, the picture is quite the opposite. In two-thirds of the countries the average tax rate for the secondary earner is higher than that of the primary earner. In countries such as Canada, Germany, New Zealand, and the United States the incremental tax rate on the second spouse entering the labor market is more than 10 percentage points. This is what we would expect for countries operating joint filing, like the United States, where the first dollar earned by the secondary earner is taxed at the same rate as the last dollar earned by the primary earner. It is quite surprising, however, that the secondary earner also bears a higher tax burden in countries operating individual filing such as Canada and New Zealand. In principle, in a system of progressive, individual-based taxation the average tax rate for the secondary earner should be strictly lower than that of the primary earner. Nonetheless, for half of the countries operating individual filing this is not the case.

The reason for the relatively high tax burdens on secondary earners, even where the formal framework is one of individual taxation, is that countries have retained large elements of jointness in the granting of tax allowances and credits. We are thinking of, e.g., dependent spouse rebates, the transfer of unutilized allowances between spouses, and child reliefs depending on the combined income of spouses. The presence of such reliefs reduces the tax burden for the first spouse entering the labor market. At the same time, as reliefs are phased-out (or lost entirely) once the second spouse enters the labor market, the effective average tax rate for the secondary earner becomes higher.

These differences in average tax rates are irrelevant in the standard analysis as it deals with the relation between marginal taxes and hours of work. In our analysis, on the other

hand, the presence of relatively high tax burdens on secondary earners strongly reduces their incentive to enter the labor market. The fact that secondary earners have high participation elasticities makes this point even more important. The table displays the magnitudes of relative tax rates (α_p/α_s from eq. 17) which in the optimum would be equal to the ratio of secondary earners' participation elasticity to that of primary earners (δ_s/δ_p). There is a large discrepancy between actual and optimal policy. The relative tax rates are below two in every country and are less than one in several countries, while the optimal ratio, as argued in the previous section, probably lies in the interval from 5 to 10. Interestingly, among the tax systems which are most inefficient, we find individual-based systems like those of Canada, Denmark, Iceland, Japan, and New Zealand.

5 The Welfare Gain from Tax Reform

Using the tax rates presented in Table I, we may calculate the marginal cost of public funds for each spouse. For this purpose we employ eq. (16) which, besides average and marginal tax rates, depends on the magnitude of the participation elasticity. In line with the evidence reviewed in Section 3, we set the elasticity for primary earners equal to 0.1, while for secondary earners we try out elasticities of 0.5, 0.75, and 1. The results are reported in Table II, which shows the MCF for primary and secondary earners, respectively, as well as the difference between the two. This difference measures the welfare gain of a reform which shifts one dollar of tax burden from the secondary to the primary earner.

< Table II >

In general, the welfare cost of raising additional revenue is high if the initial average and marginal tax rates are high, as in the Northern European countries, and if labor force participa-

tion is very responsive. Since the labor force participation is very inelastic for primary earners, and because they are generally subject to relatively lenient taxation, their MCFs are small. The values vary from 1.04 in the United States to 1.25 in Belgium. For the secondary earners, on the other hand, there is much more variation and the order of magnitudes are generally higher than for the primary earners.

Let us look initially at the case where the participation elasticity of secondary earners is $1/2$. The MCFs for secondary earners lie in the interval from 1.19 to 12.53. On the top of the list, we have Germany, Belgium and Denmark. Other countries with relatively high MCFs are Sweden, Netherlands, Italy, France, and Norway where the MCF is around 2. Finally, in the United States the MCF is 1.47, while at the lowest end of the scale, we find countries such as Australia and the United Kingdom.

In all countries, a tax shift from the secondary to the primary earner would generate a welfare gain. In many countries this gain might be very large. A reduction in the taxation of secondary earners by one dollar, financed by raising the taxation of primary earners, would generate a welfare gain equal to 11.40 dollars in Germany, 10.92 dollars in Belgium, and 2.84 dollars in Denmark. In the rest of OECD, the effects are less extreme because there is less initial discrimination against secondary earners and/or because the general tax level is more moderate. Yet, the potential welfare gains are quite large: for example 1.17 dollars in Sweden, 91 cents in Italy, 81 cents in France, 56 cents in Canada, and 43 cents in the United States. The most efficient policies are those of the United Kingdom and Australia where the taxation of secondary earners is quite lenient, although even here there are gains to be reaped from tax reform.⁴

⁴A qualification is in order for Australia. While most countries grant allowances and credits for dependent spouses and children through the tax system, these reliefs are paid out in the form of cash benefits in Australia (through the *Parenting Payment* and the *Family Tax Assistance*). This implies that our analysis, which do not

Let us turn to the case of a participation elasticity equal to $3/4$. This scenario gives rise to Laffer curve effects for three countries, indicated by the letter 'L' in the table. Thus, a lowering of the average tax rate for the secondary earner leads to a higher revenue in Belgium, Denmark, and Germany. For the remaining group of countries, with the exception of Japan, the welfare gain of reform is more than doubled compared to the low-elasticity scenario. In the United States, for example, the welfare gain of shifting one dollar of tax burden away from the secondary earner is 89 cents.

In the last two columns, we consider the case of a unit elastic labor force participation for secondary earners, still within the range of empirical estimates. As indicated by the table, the welfare gain of tax reform becomes very large in all countries, and for six countries the taxation of secondary earners is beyond the maximum of the Laffer curve.

Finally, we have investigated an alternative scenario where the income of the secondary earner is two-thirds of APW-income. The results, which are reported in Table III, reinforces the conclusions of the previous analysis. Thus, the gain of reform becomes considerably higher for most countries.

< Table III >

As previously mentioned, effective average tax rates are underestimated for both primary and secondary earners since they do not account for foregone benefits in connection with labor market entry (UI benefits, social assistance, and other cash benefits). However, this omission does not involve an a priori bias of our conclusions. On the one hand, the underestimation of tax rates is likely to be smaller for secondary earners, since they may fail to meet certain eligibility requirements for cash transfers given that they have a working spouse. In isolation include cash transfers, tend to give a too optimistic view of the Australian tax system.

this tends to lower the welfare gain from reform. On the other hand, an underestimation of tax rates for secondary earners means a lot more in terms of welfare because their labor force participation is relatively elastic. As an example, say that average tax rates for the United States are underestimated by 10 percentage points for primary earners and 1 percentage point for secondary earners. For the low-elasticity scenario, our calculations show that an error of this magnitude would leave the welfare gain from reform unchanged.

6 Concluding Remarks

There is a large gap between the efficient and the actual tax treatment of married couples. Average tax rates for secondary earners are much too high, thereby hampering labor market participation chiefly for married women. This is not only the case for countries operating joint filing, such as France, Germany, and the United States, but also for those countries operating individual filing. In the latter group of countries, many elements of jointness have been retained in the granting of allowances and tax credits. In some countries, e.g. Denmark, Iceland, Netherlands, and the United Kingdom, it is possible to transfer unutilized allowances between spouses. Other countries give tax credits for dependent spouses, where the credit is phased-out according to the secondary earner's income. This is the case in e.g. Australia, Austria, Canada, Italy, and Japan.

In general, we would like to reallocate the average tax burden from the secondary earner to the primary earner. This requires the introduction of tax allowances or credits which are conditional on the labor market entry of the secondary earner. A step in the right direction would be to abolish or weaken the rules creating problems, for example the transfer of unused allowances between spouses. An alternative option, which could be used within the framework

of both individual and joint filing, would be the implementation of an Earned Income Tax Credit (EITC) for secondary earners.

Finally, it should be mentioned that our paper is related in spirit to the recent work of Saez (2000) who extends the theory of optimal income taxation to account for both hours-of-work and participation decisions. Saez demonstrates that an EITC for low-income individuals is optimal if labor supply responses occur mainly along the extensive margin. While he investigates optimal income taxation across different individuals/households, we have argued that the incorporation of extensive labor supply responses is also important for the taxation of primary/secondary earners within each household.

Appendix A: Derivation of eq. (11)

We start by inserting the budget constraint (3) in the welfare function (10), which gives

$$U = \int_0^\infty [w_p h_p(\omega_p) - T_p(w_p h_p(\omega_p), z_p) - d_p(\omega_p)] g_p(\omega_p) d\omega_p \\ + \int_0^\infty [w_s h_s(\omega_s) - T_s(w_s h_s(\omega_s), z_s) - d_s(\omega_s)] g_s(\omega_s) d\omega_s,$$

where $g_i(\omega_i) \equiv \int_0^\infty g(\omega_i, \omega_j) d\omega_j$. Individuals with a fixed cost ω_i below the threshold-value $\tilde{\omega}_i$ choose to enter the labor market such that $h_i(\omega_i) = l_i((1 - m_i)w_i)$ for all $\omega_i \leq \tilde{\omega}_i$. All other individuals stay outside the labor force, that is, $h_i(\omega_i) = 0$ and $w_i h_i(\omega_i) - T_i(w_i h_i(\omega_i), z_i) - d_i(\omega_i) = 0$ for all $\omega_i > \tilde{\omega}_i$. Accordingly, we may write the above eq. in the following way

$$U = \int_0^{\tilde{\omega}_p} [w_p l_p - T_p(w_p l_p, z_p) - \omega_p - v_p(l_p)] g_p(\omega_p) d\omega_p \\ + \int_0^{\tilde{\omega}_s} [w_s l_s - T_s(w_s l_s, z_s) - \omega_s - v_s(l_s)] g_s(\omega_s) d\omega_s,$$

where we have used eq. (2) to substitute for the disutility terms and where $l_i \equiv l_i((1 - m_i)w_i)$.

The impact of a marginal change in one of the reform parameters equals

$$\begin{aligned} \frac{dU}{dz_i} = & - \int_0^{\tilde{\omega}_i} \frac{\partial T_i}{\partial z_i} g_i(\omega_i) d\omega_i + \int_0^{\tilde{\omega}_i} [(1 - m_i) w_i - v'_i(l_i)] \frac{dl_i}{dz_i} g_i(\omega_i) d\omega_i \\ & + [w_i l_i - T_i(w_i l_i, z_i) - \tilde{\omega}_i - v_i(l_i)] g_i(\tilde{\omega}_i) \frac{d\tilde{\omega}_i}{dz_i}. \end{aligned}$$

Using the hours-of-work condition (4) and the participation constraint (5), we may eliminate the last two terms so as to get

$$\frac{dU}{dz_i} = - \frac{\partial T_i}{\partial z_i} G_i(\tilde{\omega}_i),$$

where we have used that $G_i(\tilde{\omega}_i) = \int_0^{\tilde{\omega}_i} g_i(\omega_i) d\omega_i$. Finally, by using the relationship $\frac{\partial T_i}{\partial z_i} = \frac{\partial a_i}{\partial z_i} w_i l_i$ and the definition of aggregate employment in eq. (6), we obtain eq. (11). QED.

Appendix B: Derivation of eq. (13)

Note, again, that individuals with a fixed cost ω_i below the threshold $\tilde{\omega}_i$ work $h_i(\omega_i) = l_i((1 - m_i) w_i)$ hours, while those with a fixed cost above the threshold do not work and, consequently, pay no taxes, i.e., $T_i(w_i h_i(\omega_i), z_i) = 0$ for all $\omega_i > \tilde{\omega}_i$. This implies that eq. (12) may be rewritten to

$$T = \int_0^{\tilde{\omega}_p} T_p(w_p l_p, z_p) g_p(\omega_p) d\omega_p + \int_0^{\tilde{\omega}_s} T_s(w_s l_s, z_s) g_s(\omega_s) d\omega_s,$$

where $l_i \equiv l_i((1 - m_i) w_i)$ and $g_i(\omega_i) \equiv \int_0^\infty g(\omega_i, \omega_j) d\omega_j$. The impact of a marginal change in one of the reform parameters is given by

$$\frac{dT}{dz_i} = \int_0^{\tilde{\omega}_i} \frac{\partial T_i}{\partial z_i} g_i(\omega_i) d\omega_i - \int_0^{\tilde{\omega}_i} m_i w_i^2 l'_i \frac{\partial m_i}{\partial z_i} g_i(\omega_i) d\omega_i + T_i(w_i l_i, z_i) g_i(\tilde{\omega}_i) \frac{d\tilde{\omega}_i}{dz_i},$$

where we have used the definition of the marginal tax rate, $m_i \equiv \partial T_i(w_i l_i, z_i) / \partial (w_i l_i)$, and the fact that $\partial m_i / \partial (w_i l_i) = 0$ due to the local linearity of the tax system. The derivative $d\tilde{\omega}_i / dz_i$,

entering the above expression, may be found by differentiating the participation constraint (5).

This gives

$$\frac{d\tilde{\omega}_i}{dz_i} = -\frac{\partial T_i}{\partial z_i} - [(1 - m_i)w_i - v'_i(l_i)] l'_i w_i \frac{\partial m_i}{\partial z_i} = -\frac{\partial T_i}{\partial z_i},$$

where the last equality follows from the first-order condition for hours of work, eq. (4). By

inserting this derivative in the above expression for dT/dz_i , we get

$$\frac{dT}{dz_i} = \left[\frac{\partial a_i}{\partial z_i} - m_i \frac{w_i l'_i}{l_i} \frac{\partial m_i}{\partial z_i} - a_i \frac{g_i(\tilde{\omega}_i) w_i l_i}{G_i(\tilde{\omega}_i)} \frac{\partial a_i}{\partial z_i} \right] w_i l_i G_i(\tilde{\omega}_i),$$

where we have used the definition of the average tax rate, $a_i \equiv T_i/w_i l_i$, the derivative $\frac{\partial a_i}{\partial z_i} = \frac{\partial T_i}{\partial z_i} / (w_i l_i)$, and the definition of $G_i(\tilde{\omega}_i)$. Finally, by using eqs (6), (8), and (9) to substitute for aggregate employment, L_i , the hours-of-work elasticity, η_i , and the participation elasticity, δ_i , we obtain eq. (13). QED.

References

- Apps, P. F. and R. Rees** (1988). “Taxation and the Household.” *Journal of Public Economics* 35, 355-369.
- Apps, P. F. and R. Rees** (1999a). “Individual versus Joint Taxation in Models with Household Production.” *Journal of Political Economy* 107, 393-403.
- Apps, P. F. and R. Rees** (1999b). “On the Taxation of Trade within and between Households.” *Journal of Public Economics* 73, 241-263.
- Ashenfelter, O.** (1978). “The Labor Supply Response of Wage Earners,” in J. Palmer and J. Pechman (eds.), *Welfare in Rural Areas*. The Brookings Institution: Washington D. C.
- Blundell, R. and T. MaCurdy** (1999). “Labor Supply: A Review of Alternative Approaches,” in O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics* vol. 3A. Elsevier Science B.V.: Amsterdam.

- Boskin, M. J. and E. Sheshinski** (1983). "Optimal Tax treatment of the Family: Married Couples." *Journal of Public Economics* 20, 281-297.
- Browning, E. K.** (1987). "On the Marginal Welfare Cost of Taxation" *American Economic Review* 77, 11-23.
- Chiappori, P.** (1992). "Collective Labor Supply and Welfare." *Journal of Political Economy* 100, 437-467.
- Dahlby, B.** (1998). "Progressive Taxation and the Social Marginal Cost of Public Funds." *Journal of Public Economics* 67, 105-122.
- Eissa, N.** (1995). "Taxation and Labor Supply of Married Women: The Tax Reform Act of 1986 as a Natural Experiment." NBER Working Paper No. 5023.
- Eissa, N. and J. Liebman** (1996). "Labor Supply Response to the Earned Income Tax Credit." *Quarterly Journal of Economics* 61, 605-37.
- Gottfried, P. and W. F. Richter** (1999). "The Tax Unit and Household Production: Comment." *Journal of Political Economy* 107, 404-409.
- Heckman, J. J.** (1993). "What Has Been Learned About Labor Supply in the Past Twenty Years?" *American Economic Review Papers and Proceedings* 83(2), 116-121.
- Kleven, H. J. and C. T. Kreiner** (2001). "On the Optimality of Joint Taxation with Household Production." CESifo Working Paper No. 605.
- Meyer, B. and D. Rosenbaum** (2001). "Welfare, the Earned Income Tax Credit, and the Labor Supply of Single Mothers." *Quarterly Journal of Economics* 66, 1063-1114.
- Mroz, T. A.** (1987). "The Sensitivity of an Empirical Model of Married Women's Hours of Work to Economic and Statistical Assumptions." *Econometrica* 55, 765-799.
- OECD** (2000). *Taxing Wages: Income Tax, Social Security Contributions and Cash Family*

Benefits 1999-2000. OECD: Paris.

OECD (2001). *Tax Ratios: A Critical Survey*. OECD Tax Policy Studies No. 5. OECD: Paris.

Piggott, J. and J. Whalley (1996). "The Tax Unit and Household Production." *Journal of Political Economy* 104, 398-418.

Piggott, J. and J. Whalley (1999). "Reply to Apps/Rees and Gottfried/Richter." *Journal of Political Economy* 107, 410-418.

Robins, P. K. (1985). "A Comparison of the Labor Supply Findings from the Four Negative Income Tax Experiments." *Journal of Human Resources* 20, 567-82.

Saez, E. (2000). "Optimal Income Transfer Programs: Intensive Versus Extensive Labor Supply Responses." NBER Working Paper No. 7708, *Quarterly Journal of Economics* (forthcoming).

Triest, R. K. (1990). "The Effect of Income Taxation on Labor Supply in the United States." *Journal of Human Resources* 25, 491-516.

Van Soest, A. (1995). "Discrete Choice Models of Family Labor Supply." *Journal of Human Resources* 30, 63-88.

Van Soest, A., M. Das, and X. Gong (2002). "A Structural Labor Supply Model with Flexible Preferences." *Journal of Econometrics* 107, 345-374.

Table I. Effective tax rates for married spouses in different OECD countries, year 1999
The income of the primary (secondary) earner equals 100% (33%) of the average production worker

Country	Marginal tax rates (%)		Average tax rates (%)		Relative tax rates	Tax unit
	Primary	Secondary	Primary	Secondary	α_p / α_s	
Australia	49.9	27.8	31.1	22.8	0.7	Ind
Austria	62.4	46.5	49.7	48.8	0.8	Ind
Belgium	71.7	65.6	55.7	63.2	0.8	Ind
Canada	57.0	46.1	29.5	41.7	0.6	Ind
Denmark	59.7	59.7	48.7	60.4	0.8	Ind
Finland	65.6	48.2	55.6	46.3	0.9	Ind
France	58.3	52.1	50.8	46.7	1.0	Joint
Germany	64.8	64.8	42.2	64.8	0.7	Opt
Greece	51.6	43.1	44.4	43.1	0.9	Ind
Iceland	48.5	42.7	25.9	42.6	0.5	Ind
Ireland	48.1	44.9	36.6	38.1	0.9	Opt
Italy	60.9	52.0	51.1	49.3	0.9	Ind
Japan	30.6	32.6	24.5	30.8	0.9	Ind
Luxembourg	35.6	35.6	35.5	35.5	1.0	Joint
Netherlands	64.0	50.8	48.5	51.0	0.8	Ind
New Zealand	31.9	31.9	26.0	41.4	0.6	Ind
Norway	53.2	49.0	45.5	48.9	0.9	Opt
Portugal	48.2	41.5	40.2	41.4	0.8	Joint
Spain	51.7	32.5	38.1	53.3	0.4	Opt
Sweden	58.5	52.7	56.9	54.0	0.9	Ind
Switzerland	38.2	38.2	30.8	33.0	0.9	Joint
United Kingdom	48.0	48.0	38.8	21.6	1.8	Ind
United States	38.5	38.5	25.4	39.6	0.6	Joint
Average OECD	52.0	45.4	40.5	44.3	0.8	

Source: OECD (2000, 2001) and authors' own calculations.

Note: We consider a married couple with two children. The calculations assume that the secondary earner makes his/her participation decision conditional on that of the primary earner. The tax rates include income taxes, employees' plus employer's compulsory social security contributions, payroll taxes, and consumption taxes. The adjustment for consumption taxes is made by calculating $(TR + CTR)/(1 + CTR)$, where TR is the tax rate exclusive of consumption taxes and CTR is the consumption tax ratio (we have used the most recent estimates which are from 1996). Average OECD is a simple average for the 23 countries. The relative tax rates are calculated from expression (17). The last column indicates whether the tax unit is the individual (Ind), the couple (Joint), or optional (Opt).

Table II. The welfare effect of shifting one dollar of tax burden between spouses

The income of the primary (secondary) earner equals 100% (33%) of the average production worker

Country	Participation elasticities for primary and secondary earners							
	$\delta_p = 0.1$		$\delta_s = 0.5$		$\delta_s = 0.75$		$\delta_s = 1$	
	MCF _p	MCF _s	Difference	MCF _s	Difference	MCF _s	Difference	
Australia	1.07	1.19	0.12	1.31	0.24	1.46	0.40	
Austria	1.15	1.84	0.69	3.17	2.02	11.45	10.30	
Belgium	1.25	12.16	10.92	L	L	L	L	
Canada	1.07	1.63	0.56	2.38	1.31	4.42	3.35	
Denmark	1.14	3.98	2.84	L	L	L	L	
Finland	1.19	1.81	0.62	3.03	1.84	9.43	8.23	
France	1.14	1.95	0.81	3.72	2.58	39.71	38.57	
Germany	1.14	12.53	11.40	L	L	L	L	
Greece	1.10	1.61	0.51	2.31	1.21	4.11	3.01	
Iceland	1.05	1.59	0.54	2.26	1.21	3.90	2.84	
Ireland	1.08	1.53	0.45	2.08	1.00	3.24	2.17	
Italy	1.15	2.06	0.91	4.37	3.22	L	L	
Japan	1.04	1.30	0.26	1.52	0.48	1.84	0.80	
Luxembourg	1.06	1.38	0.32	1.71	0.65	2.23	1.17	
Netherlands	1.16	2.07	0.92	4.48	3.33	L	L	
New Zealand	1.04	1.44	0.40	1.84	0.80	2.55	1.51	
Norway	1.11	1.92	0.81	3.56	2.45	24.03	22.93	
Portugal	1.08	1.55	0.46	2.13	1.05	3.43	2.34	
Spain	1.09	1.65	0.57	2.45	1.36	4.74	3.65	
Sweden	1.16	2.33	1.17	6.94	5.78	L	L	
Switzerland	1.05	1.36	0.31	1.67	0.62	2.15	1.10	
United Kingdom	1.08	1.26	0.18	1.45	0.37	1.71	0.63	
United States	1.04	1.47	0.43	1.93	0.89	2.80	1.76	

Source: OECD (2000, 2001) and authors' own calculations.

Note: The marginal cost of public funds (MCF) is calculated from equation (16) using the tax rates reported in Table I. The difference in MCFs between spouses measures the welfare gain of shifting one dollar of tax burden from the secondary to the primary earner. The letter "L" indicates that taxation is beyond the Laffer curve's maximum such that the MCF is negative.

Table III. The welfare effect of shifting one dollar of tax burden between spouses

The income of the primary (secondary) earner equals 100% (67%) of the average production worker

Country	Participation elasticities for primary and secondary earners							
	$\delta_p = 0.1$		$\delta_s = 0.5$		$\delta_s = 0.75$		$\delta_s = 1$	
	MCF _p	MCF _s	Difference	MCF _s	Difference	MCF _s	Difference	
Australia	1.07	1.35	0.28	1.63	0.56	2.06	0.99	
Austria	1.15	2.64	1.49	14.63	13.48	L	L	
Belgium	1.25	L	L	L	L	-0.71	L	
Canada	1.07	1.68	0.60	2.53	1.46	5.18	4.11	
Denmark	1.14	3.91	2.77	L	L	L	L	
Finland	1.19	3.08	1.89	L	L	L	L	
France	1.13	2.59	1.46	12.67	11.54	L	L	
Germany	1.14	29.74	28.60	L	L	L	L	
Greece	1.10	1.66	0.56	2.49	1.39	4.93	3.83	
Iceland	1.05	1.77	0.72	2.89	1.84	7.82	6.77	
Ireland	1.08	1.60	0.53	2.30	1.22	4.05	2.98	
Italy	1.15	2.63	1.48	14.25	13.10	L	L	
Japan	1.04	1.27	0.24	1.48	0.44	1.76	0.72	
Luxembourg	1.08	1.74	0.66	2.76	1.69	6.71	5.63	
Netherlands	1.16	2.97	1.81	190.93	189.78	-3.06	L	
New Zealand	1.04	1.37	0.33	1.68	0.64	2.17	1.13	
Norway	1.11	2.11	1.00	4.73	3.62	L	L	
Portugal	1.08	1.71	0.62	2.65	1.56	5.86	4.78	
Spain	1.09	1.84	0.75	3.17	2.09	11.51	10.42	
Sweden	1.16	3.35	2.19	L	L	L	L	
Switzerland	1.06	1.47	0.42	1.93	0.88	2.81	1.75	
United Kingdom	1.08	1.51	0.43	2.04	0.96	3.12	2.04	
United States	1.04	1.46	0.42	1.91	0.86	2.73	1.69	

Source: OECD (2000, 2001) and authors' own calculations.

Note: The marginal cost of public funds (MCF) is calculated from equation (16). The difference in MCFs between spouses measures the welfare gain of shifting one dollar of tax burden from the secondary to the primary earner. The letter "L" indicates that taxation is beyond the Laffer curve's maximum such that the MCF is negative.

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