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CESifo Working Paper, No. 391

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Suggested Citation: Wrede, Matthias (2000) : Income Splitting - is it Good for Both Partners in the Marriage?, CESifo Working Paper, No. 391, Center for Economic Studies and ifo Institute (CESifo), Munich

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CESifo *Working Paper Series*

INCOME SPLITTING – IS IT GOOD FOR BOTH PARTNERS IN THE MARRIAGE?

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Working Paper No. 391

December 2000

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CESifo *Working Paper No. 391*
December 2000

INCOME SPLITTING – IS IT GOOD FOR BOTH PARTNERS IN THE MARRIAGE?

Abstract

This paper analyzes the effects of an income splitting system on marriage partners. The focus is on the time allocation, on investment in marriage-specific human capital and on the distribution of income within the family. Two insights are discussed in detail. First, the distribution of tax-reduction gains due to the income splitting system depends on whether the family has been started or not. After marriage, joint taxation increases redistribution among family members. Second, although the income splitting system reduces the tax burden of the family, it might harm the marriage partner that is more productive in household production provided that potential marriage partners foresee the effects of joint taxation on the family.

Keywords: Income taxation, income splitting, private provision of public goods, household production

JEL Classification: D13, H22, H41

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Income splitting – Is it good for both partners in the marriage?

I. Introduction

Even in industrialized countries the tax treatment of marriages is quite heterogeneous [see Messere (1998), Organization for Economic Cooperation and Development (1993), Pechman and Engelhardt (1990)]. Some countries such as Germany and the United States apply an income splitting system, while others like France use a quotient system which includes children. Support to couples by tax credits and tax allowances are given in several countries such as Canada, Australia, Italy, the United Kingdom and Japan. In many countries one-earner couples are preferentially treated compared to two-earner couples. The tax consequences of marriage are typically considerable [see, e.g., Rosen (1987)]. But the different systems lead to substantial differences in the amount of tax reductions [see, e.g., Pechman and Engelhardt (1990)].

Since Gary Becker initiated the economic analysis of the family [see Becker (1991)], the various aspects of the family's economic situation have been analyzed. Among others, there is a large strand of literature both theoretical and empirical that focuses on the taxation of married couples. First, equity and neutrality issues were discussed [see, e.g., Rosen (1977)]. While individual taxation violates horizontal equity with respect to married couples with equal family income if the spouses' earnings are different, joint taxation does not achieve horizontal equity with respect to married couples and non-married couples. Second, the optimum-taxation approach has been applied to married couples [the seminal papers are Boskin and Sheshinski (1983) and Apps and Rees (1988)]. For example, the inverse elasticity rule rejects the perfect income-splitting system and recommends a lower tax rate for women since the women's income elasticity of labor supply is typically higher than the men's elasticity. Third, the incidence of the marriage subsidy has been analyzed in detail. For example, Alm and Whittington (1997) discussed the impact of marriage taxes and subsidies on the decision to marry and, particularly, on the timing of marital decisions. Whittington and Alm (1997) considered the effect of income taxation on divorce.

The basic question raised in this paper is whether both man and woman benefit from the tax reduction due to an income-splitting system. The aim of this paper is twofold. On the one hand, the impact of the tax approach towards married couples on before-marriage investment in human capital that can be used in household production will be considered. On the other hand, the distribution of the benefits caused by the tax reduction among family members will be considered.

Investment in education prior to the marriage has been analyzed before, e.g., Konrad and Lommerud (2000) have shown that individuals will overinvest in human capital that can be used in the labor market. One scenario is that individuals will prepare themselves for a lot of work in the outside labor market if the marriage partners will non-cooperatively decide on the allocation of time and, therefore, will spend inefficiently little time in household production. Another scenario is that individuals want to increase their fall-back utility level in order to strengthen their position in a Nash-bargaining process. People that overinvest in market compatible skills underprovide family public goods such as well brought-up children, well-being of elderly parents, etc.

In this paper the focus will be on investment in specific human capital that is useful in household production. Education can either be exclusively aimed at the outside labor market or it can also be oriented to household production and, particularly, to the bringing up of children. For instance, general education and teaching training partially impart knowledge of bringing up children. However, teachers, educators and nurses typically earn less money than comparable professions. Furthermore, the percentage of women in these professions is extraordinarily high. That might have to do with the usefulness of profession-specific knowledge in bringing up children. For instance, in April 1998 in Germany, 9,8% of female workers worked in the health services, while just 1,2% of male workers did. Similarly, 5,8% (0,9%) of female (male) workers had a social profession and 4,4% (2,6%) were teachers. 90% of the jobs in care of the body were filled by women [see Statistisches Bundesamt (1999)]. In the European Union in 1995/96, the total proportion of female graduates was 53%, but in medical science the percentage of women was 69% and in humanities, applied arts, and religion it was 71% [see Eurostat (1998)].

This paper will analyze the impact of the tax treatment of marriages on investment in human capital that is comparably useful in household production. A main question is whether investment is encouraged or discouraged by joint filing and who benefits from joint taxation.

The paper also considers the effect of joint taxation on specialization and on the distribution of income among family members during and after the bringing up of children. Of particular interest is whether both or only one spouse benefit from tax reductions and how intra-family transfers will be adapted to a change in the tax treatment of marriage.

The paper is organized as follows. The discussion of the effects of income splitting on family behavior and income distribution within the family is divided into two parts. While the second section considers the family at the wedding day and after marriage, the third section focuses also on investment decisions before marriage. A summarizing section brings the discussion to an end.

II. At the wedding day and after marriage

The paper considers a family consisting of two people, $i = f, m$, who make decisions. This section focuses on the wedding day and the time thereafter. The marriage lasts at most two periods. In the first period children are brought up; in the second period the marriage partners just live together. The family has to decide how much time each member devotes to raising children and how to distribute the income among the marriage partners. Utility is calculated in income terms. For simplicity, it is assumed that only married partners have children and that children are born in the first marriage period of their parents.

First, the second period is analyzed. The partners are married and had already decided on the allocation of time to raise children. The woman had devoted R_f hours to bringing up children, hear husband R_m hours. The less time an individual had worked outside the household in the past, the less experienced it is and the less money it can earn now. Therefore, the wage rate, w, is negatively correlated with the number of hours a person had devoted to the children. This fact is captured by a negatively sloped and concave wage rate function $w_i = w(R_i)$. Since children had been brought up already, both family members use their entire disposable time for working outside the household. The working hours of each individual are normalized to one. Hence, gross labor income of individual i is w_i.

Labor income is subject to a progressive income tax. The tax function, T, is continuos, twice differentiable, increasing and convex as it is in Germany. Under an income splitting system, the tax due from individual i is $T_i = T(\alpha w_j + (1-\alpha)w_i)$, $i, j = f, m$, $j \neq i$, $0 \leq \alpha \leq 1/2$. While income would be perfectly split if α were equal to one half, splitting would only be partial if $0 < \alpha < 1/2$. With α being zero, individual taxation instead of joint taxation would be applied.

Since net family income can be distributed among the family members in any way, the available income (utility) of the two marriage partners can be written as

$$(1) \qquad u_m^2 = w(R_m) - T(\alpha w(R_f) + (1-\alpha)w(R_m)) - Z^2,$$
$$u_f^2 = w(R_f) - T(\alpha w(R_m) + (1-\alpha)w(R_f)) + Z^2,$$

where Z^2 denotes a transfer from the man to his wife, which might be either positive or negative.[1]

In case of divorce, gross income is the same, but individuals are subject to individual taxation. Hence, the tax burden of person i is $\Theta_i = T(w_i)$. Some real costs such as lawyer's fees and some 'psychic' costs are connected with a divorce. The (positive) per-capita costs are denoted by D. Whether or not the low-income individual is entitled to maintenance depends basically on the law. Here, two somewhat extreme scenarios of maintenance obligations are considered. Either no obligation to pay maintenance exists or the income net of taxes of the former family members are equalized by maintenance payments. Hence, in case of a divorce, the achievable income (utility) of the former marriage partners are

$$(2) \qquad \bar{u}_m^2 = w(R_m) - T(w(R_m)) - M - D,$$
$$\bar{u}_f^2 = w(R_f) - T(w(R_f)) + M - D,$$

where M indicates the money transfer from the man to his former wife, which might be positive, negative or zero, depending on the law and on the allocation of time for raising children.

This paper assumes that the behavior of marriage partners in both periods can be described by Nash bargaining. Nash bargaining has two main advantages. First, it ensures

---

[1] Here and in the following, the superscripts 1 or 2 indicate the period under consideration.

efficiency. This feature will become important later on. Second, Nash bargaining makes a plausible prediction of the distribution of efficiency gains, which refers to the outside options, i.e., to the threat points. Although one might argue that non-cooperative equilibrium within a marriage is an adequate threat point [see, e.g., Lundberg and Pollak (1993) and Konrad and Lommerud (2000)], this paper uses the traditional divorce-threat-point bargaining approach [see Manser and Brown (1980) and McElroy and Horney (1981)]. The latter is clearly the natural approach in this section which only considers the distribution of income. But even in the next section, which also deals explicitly with the allocation of time, non-cooperative behavior seems to be somewhat strange since there are so many opportunities to cooperate within a marriage. Pure non-cooperative behavior of marriage partners, which has been considered by, e.g., Lundberg and Pollak (1994) and Konrad and Lommerud (1995), is particularly implausible if the resultant equilibrium is inefficient. It should be possible for marriage partners to enter into binding agreements to overcome inefficiency.

Marriage partners will stay together only if $\Theta_m + \Theta_f - (T_m + T_f) \geq -2D$, which is always fulfilled since the tax savings due to the income splitting system (the LHS) are non-negative.

Marriage partners that employ the divorce-threat Nash bargaining approach choose in the second period the transfer Z^2 so as to maximize $(u_m^2 - \bar{u}_m^2)(u_f^2 - \bar{u}_f^2)$. The optimum transfer and the resultant utilities are

$$
\begin{aligned}
& Z^2 = \frac{\Theta_m - T_m - (\Theta_f - T_f)}{2} + M, \\
(3) \qquad & \hat{u}_m^2 = w_m - \frac{T_m + T_f}{2} + \frac{\Theta_f - \Theta_m}{2} - M, \\
& \hat{u}_f^2 = w_f - \frac{T_m + T_f}{2} + \frac{\Theta_m - \Theta_f}{2} + M.
\end{aligned}
$$

The more in case of divorce the man's net income exceeds his former wife's net income and the lower the maintenance payment after divorce is, the higher is the income share of the husband and the lower is consequently the share of the wife.[2] If the maintenance payment

[2] Recall that the maintenance payment is negative if the woman supports her former husband.

equalized income net of taxes, the transfer would be $Z^2 = (w_m - T_m - (w_f - T_f))/2$ and spouse i would get $\hat{u}_i^2 = (w_m + w_f - (T_m + T_f))/2$. Marriage partners income shares are the same. Without a maintenance payment the difference in utility $\hat{u}_m^2 - \hat{u}_f^2 = w_m - \Theta_m - (w_f - \Theta_f)$ is independent of the tax system given the data of the first period.

Now, consider the first period. In order to make things as simple as possible, the wage rate w is exogenously given in the first period. The two potential marriage partners may marry or not. If both stay alone, net of taxes they earn in every period $w - T(w)$ each. Lifetime utility would be $\bar{u} = (w - T(w))(1 + \delta)$, where δ is the common discount factor. If they get married, they will have children and they will have to spend part of their time to bring them up. The working hours of individual i outside the household are $1 - R_i$. Spending time to raise children has some psychic costs, taken into account by an increasing and convex cost function, $\phi_i = \phi(R_i)$. If a family member devotes only a few hours to the children, these costs are probably negative but pleasure shrinks with the number of hours. Parents derive utility from well educated children. This is also measured in income terms. There are no differences in utility with respect to children. The utility of raising children is simply a weighted sum of the numbers of hours devoted to the children. The weights are the (constant) marginal products in education. The marginal products of family members, β_m and β_f, are not necessarily the same. Productivity differentials are due to inborn differences and to different training. However, this section takes the productivity differentials as exogenously given. By an either positive or negative transfer from the man to the woman, Z^1, resources can be redistributed among family members. Hence, utilities of married family members in period one are

$$(4) \quad u_m^1 = (1 - R_m)w - T(\alpha(1 - R_f)w + (1 - \alpha)(1 - R_m)w) - \phi(R_m) + \beta_m R_m + \beta_f R_f - Z^1,$$

$$u_f^1 = (1 - R_f)w - T(\alpha(1 - R_m)w + (1 - \alpha)(1 - R_f)w) - \phi(R_f) + \beta_m R_m + \beta_f R_f + Z^1.$$

Lifetime utility of a spouse is $u_i = u_i^1 + \delta\hat{u}_i^2$.

Obviously, a necessary precondition for marriage is that total utility is higher than it would otherwise be. When marriage partners also play a Nash-bargaining game on the wed-

ding day, they choose the transfer, Z^1, so as to maximize $(u_m - \bar{u})(u_f - \bar{u})$. Since, by assumption, the threat points are the same, the transfer will equalize lifetime utilities, and thus

$$(5) \qquad Z^1 = \frac{\delta(\hat{u}_m^2 - \hat{u}_f^2)}{2} + \frac{R_f w + T_f^1 + \phi_f - (R_m w + T_m^1 + \phi_m)}{2}.$$

The higher, compared with his wife, the man's utility in period 2 is, the lower his tax burden in period 1 is. The lower his psychic costs of educating children are, and the lower the forgone labor income is, the higher is the transfer from the man to his wife.

The marriage partners will determine the allocation of time so as to maximize total lifetime utility:

$$(6) \qquad \begin{aligned} u &= u_m^1 + u_f^1 + \delta(\hat{u}_m^2 + \hat{u}_f^2) \\ &= \sum_{i=m,f} \left[w(1 - R_i) - \phi_i + 2\beta_i R_i - T_i^1 + \delta(w_i - T_i^2) \right]. \end{aligned}$$

An increase in the time spent by individual i for raising children changes in the second period the tax savings due to the income splitting system according to

$$(7) \qquad \frac{\partial(\Theta_m + \Theta_f - (T_m^2 + T_f^2))}{\partial R_i} = w_i' \left[\Theta_i' - (1-\alpha) T_i^{2\,\prime} - \alpha T_j^{2\,\prime} \right], \quad i = m, f\ ,\ j \neq i\,.$$

This term is zero if family members are also subject to individual taxation, i.e., if α is zero. The term is certainly negative (positive) if individual i earns in period 2 more (less) money than the spouse. A stronger dispersion in the allocation of time leads to higher tax savings.

The first-order conditions for an interior solution of the family's utility maximization problem are, $i = m, f\ ,\ j \neq i$:

$$(8) \qquad \begin{aligned} \frac{\partial u}{\partial R_i} &= \delta w_i' \left[1 - \alpha T_j^{2\,\prime} - (1-\alpha) T_i^{2\,\prime} \right] - w \left[1 - \alpha T_j^{1\,\prime} - (1-\alpha) T_i^{1\,\prime} \right] - \phi_i' + 2\beta_i \\ &= 0. \end{aligned}$$

The marginal increase in utility through better education of the children should be equal to the marginal decrease in net income in present value terms plus the marginal psychic costs. These conditions determine functions $R_i(\alpha)$, $i = m, f$.

As a benchmark case, consider first individual taxation, i.e., that α is zero. Both marriage partners would spend just the same time with their children and earn the same money in the second period if the man were as productive as the woman in bringing up children.[3] Resources would not be transferred from the man to his wife in the first period. If the woman is more productive in raising children than the man, she devotes a larger percentage of her time to the children than her husband. Hence, she earns less money in the first period. Furthermore, her labor income in the second period is smaller and her threat point, therefore, lower. The utility differential in the second period $\hat{u}_m^2 - \hat{u}_f^2$ is positive, and, therefore, the first-period transfer will be high.

Now, the effects of joint taxation, i.e., of an increase in α, will be analyzed. Since the effects are in general considerably complex, the focus will only be on small deviations from individual taxation, i.e., a small increase in α starting from α being zero. Total discounted utility changes according to

$$\text{(9)} \qquad \frac{du}{d\alpha} = w\left(R_f - R_m\right)\left(T_m^1{}' - T_f^1{}'\right) + \delta\left(w_f - w_m\right)\left(T_f^2{}' - T_m^2{}'\right).$$

Furthermore, applying the implicit function theorem to (8), it can obtained for α being zero that

$$\text{(10)} \quad \frac{dR_i}{d\alpha} = \frac{w\left(T_j^1{}' - T_i^1{}' + wT_i^1{}''\left(R_i - R_j\right)\right) + \delta w_i'\left(T_i^2{}' - T_j^2{}' + T_i^2{}''\left(w_i - w_j\right)\right)}{\phi_i'' + w^2 T_i^1{}'' + \left(w_i'^2 T_i^2{}'' - w_i''\left(1 - T_i^2{}'\right)\right)\delta}, \; i = m, f \; , \; j \neq i \, .$$

Consider a small productivity asymmetry in raising children. Even under individual taxation, the participation in the labor market of the person with the higher household-specific productivity will be smaller and the second-period wage will be lower. Because of the progressive tax system, this person faces a lower marginal tax rate. If a step in the direction of joint taxation is put forward, both family members are better off (as can be seen from (9)). Due to the nature of Nash bargaining, the marriage partners will benefit equally. Furthermore, the family members will specialize even more.[4] As a consequence, transfers in the first and in

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[3] Note that any differences in psychic costs and labor-market productivity are assumed away.

[4] This can be concluded from (10) if the second-order conditions of the family's utility-maximization problem are taken into account.

the second period will be increased. The person that is more productive at home has to be compensated for less labor income.

It is also worthwhile to analyze how a change in the tax treatment of marriages affects old families that had already brought up children. Hence, consider the introduction of a (partial) income-splitting system at the beginning of the second period. Provided that wages are different, both family members benefit equally. This will be ensured by higher transfers from the high-income individual to its spouse. The transfer changes according to $dZ^2/d\alpha = (w_m - w_f)(T'_m + T'_f)/2$.

Whether the tax reform takes place at the beginning or in the middle of the marriage, the Nash-bargaining procedure ensures a uniform distribution of benefits. Not surprisingly, joint taxation requires more redistribution within the family since the primary net market incomes are more unequally distributed. To summarize:

Proposition 1: Both family members benefit equally from the introduction of an income-splitting system. By means of higher transfers it can be ensured that also the low-income individual benefits. If the tax reform is announced at the beginning of the marriage, family members that are differently productive educators specialize even more than under individual taxation. #

III. Before Marriage and thereafter

This section also considers a two-person-family. However, it focuses on investment in marriage-specific human capital before marriage. It is assumed that potential marriage partners already know each other when they invest. Investment before marriage, I_i, determines the productivity of individual i in raising children. For simplicity, investment in human capital does not affect the productivity in the outside labor market. Hence, the wage rate, w, is a constant. The outcome of raising children is again an additive function in the time variables R_m and R_f: $\sum_{i=m,f} \beta(I_i)R_i$, where $\beta(0) > 0$. But the marginal productivity in household production, $\beta_i = \beta_i(I_i)$, is an increasing and concave function of investment. Note that the individuals possibly differ in productivity. In this section, a person i is designated as always more productive than person j if $\beta_i(I) > \beta_j(I)$ for all $I \geq 0$. The costs of investment, whether real or 'psychic', are described by an increasing and convex function $\varphi_i = \varphi(I_i)$. These costs are borne

by the investing individual. The total time per person available for working outside and inside the households is again constant and normalized to one. Psychic costs of spending time with the children, ϕ_i, have the same properties as before. Now, the marriage consists of just one period. Furthermore, the tax system is the same as in the previous section.

Once investments are sunk, the two persons under consideration decide on marriage and on the time allocation with respect to raising children. Then, total *remaining* family utility measured in income terms can be written as[5]

$$(11) \qquad \tilde{u} = \sum_{\substack{i=m,f \\ j\neq i}} \left[(1-R_i)w - T\left(\alpha(1-R_j)w + (1-\alpha)(1-R_i)w\right) - \phi(R_i) + 2\beta(I_i)R_i\right].$$

Obviously, total family utility is $u = \tilde{u} - \varphi(I_m) - \varphi(I_f)$. Either one threatens to refuse marriage, so the threat point of individual i is $\bar{u}_i = w - T(w) - \varphi(I_i)$. Both will get married only if

$$(12) \qquad \sum_{i=m,f}[\Theta_i - T_i] + \sum_{i=m,f}[2\beta(I_i)R_i - R_i w - \phi(R_i)] \geq 0 .$$

The tax savings plus the net benefit from having children, i.e., the second term on the LHS, have to be positive.

In a Nash-bargaining game the two potential marriage partners decide on the allocation of time and the distribution of utility among them. Because of the linearity, the family will distribute resources such that finally member i gets

$$(13) \qquad \hat{u}_i = \frac{u}{2} + \frac{\bar{u}_j - \bar{u}_i}{2} = \frac{\tilde{u}}{2} - \varphi(I_i), \quad i = m, f\ ,\ j \neq i .$$ [6]

The individual which invested less is ultimately better off since the other person free rides to a larger extent.

Given the levels of investment, the family maximizes $\tilde{u}$ by choosing the time allocation. The first-order conditions for an interior solution are, $i = m, f\ ,\ j \neq i$:

$$(14) \qquad \frac{\partial \tilde{u}}{\partial R_i} = 2\beta_i - w\left[1 - \alpha T_j' - (1-\alpha)T_i'\right] - \phi_i' = 0 .$$

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[5] For simplicity discounting is neglected.

The marginal increase in direct utility of brought up children should be equal to the sum of marginal losses in net labor income and of the marginal psychic costs. Household production time R_i and Investment I_i are positively correlated. Hence, the higher the marginal productivity in household production, the more time is spent within the household. The two conditions (14) determine functions $R_i(\alpha, I_m, I_f)$, $i = m, f$. Note that under individual taxation the number of hours individual i works in the household is independent of the investment of its spouse.

Before marriage each individual decides independently on investment in specific human capital. If the individuals take the result of the Nash-bargaining procedure at the wedding day into account, they choose investment so as to each maximize $\hat{u}_i$. At the Nash equilibrium at the investment stage, the following two first-order conditions are fulfilled:

$$(15) \qquad \frac{\partial \hat{u}_i}{\partial I_i} = \frac{1}{2}\left[\frac{\partial \tilde{u}}{\partial R_m}\frac{\partial R_m}{\partial I_i} + \frac{\partial \tilde{u}}{\partial R_f}\frac{\partial R_f}{\partial I_i}\right] + \beta_i' R_i - \varphi_i' = 0, \quad i = m, f .$$

Since the term in square brackets is zero, at the Nash equilibrium the marginal increase in children-training productivity should simply be equal to the marginal investment costs.

The Nash equilibrium is inefficient since, at the Pareto optimum, $2\beta_i' R_i = \varphi_i'$ should be fulfilled. Non-altruistic individuals ignore the positive direct impact of their investment on the utility of their (potential) marriage partners. Starting at a Nash equilibrium, the marginal costs of investment and therefore investment itself should be higher. To summarize:

Proposition 2: At the Nash equilibrium, the two non-altruistic individuals would benefit from higher joint investment in marriage-specific human capital. #

Bringing up children is simply a marriage-specific public good [see, e.g., Lundberg and Pollak (1994) and Konrad and Lommerud (2000)]. By investing in specific human capital, potential marriage partners voluntarily contribute to the public good. Underprovision due to the opportunity to free ride is the well known result.

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[6] Here and in the following, the utility values are evaluated at the optimum time parameter values.

The conditions (15) determine functions $I_i(\alpha)$, $i = m, f$. Applying the implicit function theorem at $\alpha = 0$ leads to[7]

$$(16) \qquad \frac{dI_i}{d\alpha} = \frac{w\beta_i'\left(T_i' - T_j' + wT_i''(R_j - R_i)\right)}{2\beta_i'^2 + (\beta_i''R_i - \varphi_i'')(\phi_i'' + w^2T_i'')}, \quad i = m, f\ ,\ j \neq i\,.$$

A small deviation from individual taxation gets individual i to invest more if this person has already spent more time with the children and faces therefore a lower marginal tax rate than the spouse. Hence, while the individual that is more productive in the household will increase investment, its spouse will reduce investment. The effect of (partial) joint taxation on total investment is ambiguous and depends on the functional form of costs, taxes and productivity. Utility changes according to

$$(17) \qquad \begin{aligned} \frac{d\hat{u}_i}{d\alpha} &= \frac{\partial \hat{u}_i}{\partial \alpha} + \frac{\partial \hat{u}_i}{\partial I_j}\frac{dI_j}{d\alpha} \\ &= \frac{w(R_m - R_f)(T_f' - T_m')}{2} + \varphi_j' \frac{w\beta_j'\left(T_j' - T_i' + wT_j''(R_i - R_j)\right)}{2\beta_j'^2 + (\beta_j''R_j - \varphi_j'')(\phi_j'' + w^2T_j'')}, \end{aligned}$$

$i, j = m, f$, $j \neq i$. The direct effect is clearly positive provided that there is some asymmetry in the family. Since the indirect effect is either positive or negative, the sign of the total effect is ambiguous. Either both or only one marriage partner will benefit from the change towards income splitting. There is the possibility that the tax reform harms one individual because its (potential) spouse reduces investment heavily. Since it is the less productive person that will invest less under income splitting, the individual that is more productive in household production might be the one to suffer. The following proposition states this result.

Proposition 3: The individual that is always less productive in household production will benefit more than its spouse by a small step towards income splitting. The spouse might even be harmed by the change in the tax system. #

Since well brought-up children are considered as a public good within the family and investment in household-production-specific human capital is a voluntary contribution to the

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[7] Because of the second-order conditions, the denominator is negative.

public good, the results of this section reproduce, in principle, results that have already been discussed in the literature on private provision of public goods.[8] In fact, Ihori (1996) investigated productivity differentials in contributing to public goods.[9] He found out that contributors with high productivity do not necessarily achieve high utility levels. The analysis carried out by this paper confirms his result. However, the frameworks employed by Ihori and in the ones this paper differ from each other. While Ihori considered direct contributions to a public good, this paper focused on more indirect contributions. Both family members jointly decide on the public good quantity by determining the allocation of time. However, the marriage partners independently contribute to the public good by their decisions on their productivity.[10]

IV. Concluding remarks

This paper has analyzed the effects of an income splitting system on marriage partners. The focus was on the time allocation, on investment in marriage specific human capital, and on the distribution of income within the family.

The starting point was that the distribution of tax-reduction gains due to the income splitting system depends on whether the family has been started or not. First, if joint filing is not introduced earlier than the wedding day, both family members benefit. By means of higher transfers it can be ensured that also the low-income individual benefits. If the tax reform is announced at the beginning of the marriage, family members that are differently productive educators specialize even more than under individual taxation.

Second, if a partial income splitting system is introduced long before marriage, the individual that is always less productive in household production will benefit more than its spouse by a small step towards income splitting. The spouse might even be harmed by the change in the tax system.

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8 A good introduction to this literature is Bergstrom, Blume, and Varian (1986).

9 Buchholz and Konrad (1995) considered productivity differentials and strategic transfers before the contributions have to be made. Wrede (1998) considered strategic changes in productivity.

10 The interaction between non-cooperative contributions and cooperative contributions determined by Nash bargaining has been discussed by Hoel (1991).

Not only in Germany the income-splitting system is currently being tested. Although the paper has not analytically discussed the complete transition from the perfect income-splitting system to individual taxation, one is tempted to use the intuition presented in the paper to speculate about a non-marginal reform such as that. Already married partners will suffer from the increase in the tax burden. The same holds true for couples that consider marriage at the moment of the reform. These couples will allocate the time more evenly than under the income splitting system. Whether young people that actually organize their education and plan to marry later on benefit or suffer is not clear. Individuals that are more productive in household production and, particularly, in bringing up children might benefit in spite of the higher tax burden for families. Hence, particularly, if the additional tax revenue is taken into account, a provocative conclusion of the paper is that young women are certainly the winners provided that women's productivity in bringing up children is higher. Old married couples and young men are the losers of a change from joint taxation to individual taxation.

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