

Household Taxation, Income Splitting and Labor Supply Incentives - A Microsimulation Study for Germany

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Abstract:

We analyze potential labor supply effects of a shift from the current German system of joint taxation of married couples to a system of limited real income splitting on the basis of an econometric household labor supply model embedded in a tax-benefit model. Our simulation results show relatively small labor supply effects of a shift from the current system to one of limited real income splitting system. In the benchmark scenario of a shift to separate taxation labor supply of wives would increase substantially in West Germany, while a significant number of husbands would drop out of the labor force.

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1 Introduction

The joint taxation of married couples in Germany has been a controversial issue in practical fiscal and social policy for some time. There has also been a long-standing debate among economists about the normative rationale as well as allocation and distribution effects of the special taxation of married couples in Germany, known as “income splitting”. This principle means that the income tax of a married couple is calculated by applying the tax function to half of the added incomes of the spouses, and this amount is then doubled to determine the tax amount of the couple. Under the German system of progressive taxation this implies that the amount of the income tax of a married couple may be lower than the tax the same couple would have to pay if both spouses were taxed individually according to the principle of separate taxation, as it is the case in, e.g., Austria or Sweden. The difference in the tax under these two principles depends both on the level of household income and the distribution of incomes between the two spouses. In popular German discussion, this difference is termed the “splitting advantage” of the joint taxation of married couples.

There are two prevalent criticism of this alleged “splitting advantage”: First it is viewed as a subsidy to married couples with the traditional division of labor within the household, where the wife as the secondary earner stays at home. In this view, the relatively low labor force participation rate of married women in Germany is closely related to the negative labor supply incentives for second earners implied by the tax system.¹ From a social policy perspective, critics also point out that income splitting is not an adequate means of family policy as it does not subsidize households with children but married couples, while increasingly these two groups cease to coincide. In contrast, the majority view among public finance experts seems to be that there is no “splitting advantage” at all. Rather, the difference in the amount of taxes paid by married couples is considered to be the logical consequence of the system of progressive taxation, given the widely agreed normative rules that the tax system should not discriminate against marriage and, at the same time, should be neutral with respect to the distribution of incomes within the household (see, e.g., Spahn, Kaiser and Kassella, 1992, Homburg, 2000).

In this paper, our focus is on the positive issue of the negative incentives of the current German system of income splitting on labor supply of wives. In particular, we will simulate

¹ For example, comparing the Swedish system of separate taxation of married couples with the German system of income splitting, Gustafsson (1992: 61) states: “The German wife, on the other hand, has to earn enough to offset the marriage gain, before she contributes to family income, and marginal earnings of the second wage earner are hit by a high tax rate”.

the labor supply effects of a shift to some other system of taxation. To this end, we analyze two hypothetical reforms: (i) a shift to a system of individual income taxation, and (ii) the proposal of “limited real income splitting”. For both political and constitutional reasons, it seems very unlikely that individual taxation for spouses will be introduced in Germany. The second reform proposal, which limits the amount of the “splitting advantage”, has been discussed during the last election campaign by the ruling coalition and it is likely that this proposal will show up in the future.

To simulate the labor supply effects of these hypothetical reforms, we develop a microsimulation model which integrates an empirical household labor supply model into a detailed tax-benefit model based on the German Socio Economic Panel (GSOEP). The labor supply model is based on the hypothesis that both spouses jointly maximize a utility function in the arguments leisure of both spouses and net household income. This “household utility” model differs in important ways from previous studies on the labor supply effects of household taxation in Germany. The specification of the household labor supply model in these studies are based on the “male chauvinist” assumption: that is, the wife is assumed to adjust her labor supply to that of the husband who, in turn, does not care about his wife’s labor supply behavior. We believe that the behavioral assumption underlying our econometric labor supply model is a better description of actual behavior than the one implied by the “male chauvinist” labor supply model. In particular, our model allows us to estimate the effects of a change in household taxation on the labor supply of both spouses, whereas previous studies have only looked at the wife’s labor supply decision. Furthermore, we also estimate the effects of the change in taxation on both spouses’ labor force participation and the hours decision simultaneously.

In the next section, we briefly describe the German system of taxation of married couples and define the so-called “splitting advantage” referred to above. We also briefly summarize the empirical studies on the potential labor supply effects of reforms in household taxation in Germany relevant for our study. In section 3, we present the econometric specification of our labor supply model, which we then use to simulate the shift from the current system of income splitting to the hypothetical benchmark of separate taxation and a more realistic “limited real income splitting” scenario. Simulation results for the implied income effects (for given labor supply) and the effects of this shift on labor supply in Germany are summarized in section 4. The main results of our study are summarized in the concluding section 5.

2 Distribution and Labor Supply Effects of “Income Splitting”

To set the scene for our simulation study of the potential labor supply effects of a shift from the current German system of income splitting to other forms of household taxation, in the following section we briefly describe different income tax regimes for married couples and illustrate the “splitting advantage” for the German case. In section 2.2, we briefly summarize previous empirical studies on the effects of income splitting on labor supply of married women in Germany.

2.1 Household Taxation, Income Splitting, and the “Splitting Advantage”

Income tax regimes of European countries differ greatly regarding the tax treatment of married couples. In some countries (Sweden, Austria, Great Britain)², individuals are taxed subject to their own income, independently of their marital status. Other countries, such as Germany, treat married couples as a single tax subject and tax the incomes of spouses jointly. To avoid the “marriage penalty” that arises in a progressive tax system as a consequence of joint taxation, Germany allows income splitting between spouses: The income tax of a married couple is calculated by applying the tax function to half of the sum of the spouses’ incomes; this amount is then doubled to determine the tax amount of the couple. In Figure 1, the German system of joint taxation with income splitting is compared with the system of separate taxation and a modified system of separate taxation.

Figure 1—Income tax regimes for married couples

Separate taxation:

$$T(Y_H, Y_W) = t(Y_H) + t(Y_W)$$

Joint taxation with income splitting:

$$T(Y_H, Y_W) = 2 \times t[(Y_H + Y_W)/2]$$

Separate taxation with tax allowance for support payments

(“limited real income splitting”):

$$T(Y_H, Y_W) = t(Y_H - A) + t(Y_W + A) \quad \text{with } A \leq |Y_H - Y_W| / 2 \text{ and } A \leq \text{some threshold}$$

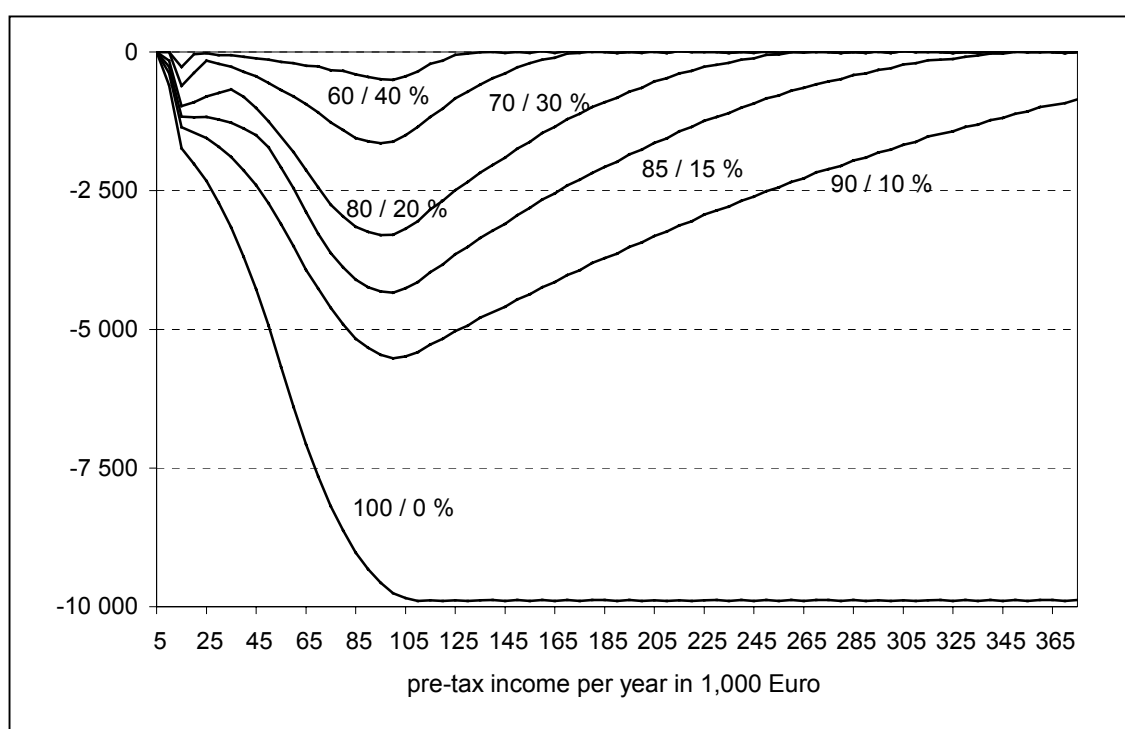
with Y_H = income husband, Y_W = income wife,

$T(\cdot)$ = income tax charged, $t(\cdot)$ = tax function

² For a survey on the income tax systems of European countries, see for example Dingeldey (2001).

Income splitting guarantees that married couples, given a certain household income, will always be charged the same amount of income tax, no matter how income is distributed between husband and wife. It therefore also implies that no married couple will pay higher income taxes than a single individual with the same household income. This tax neutrality towards the income distribution between spouses, however, leads to non-neutrality towards marital status. An unmarried couple could “save” taxes through marriage because of the “splitting advantage”.³ The “splitting advantage” is defined as the difference between the tax amount that a married couple pays under income splitting and the amount the same couple would pay in case of separate taxation. The amount of this advantage depends on the income distribution between husband and wife and, in the presence of a progressive tax system, on the absolute level of household income. In the following figure the splitting advantage is illustrated for the tax function of the year 2002 / 2003.

Figure 2—“Splitting Advantage” for married couples under the current system of income taxation in Germany (2002/03)



Note: The first (second) number refers to the husband's (wife's) percentage share in the spouses' joint household pre-tax income per year (in DM).

Source: Calculations by the German Institute of Economic Research (DIW Berlin).

³ As mentioned in the introduction, the connotation of the term „splitting advantage“ is open to question. For a discussion of the impossibility of jointly fulfilling all reasonable objectives on a system of taxing couples, see Spahn, Kaiser and Kassella (1992).

As can be seen from Figure 2, the splitting advantage attains its maximum for single earner households. It declines rapidly, with an increasing share of second earner's income. In the case of a couple with a pre-tax income of 100,000 € per year, according to the tax function of the year 2002/03, the splitting advantage is 9,757 € for a single-earner couple. The splitting advantage declines to 5,524 € if the income share of the second earner is 10%, given constant household income. For couples with a second-earner income share of 30%, the splitting advantage falls down to 1,618 €. On the other hand, for a given share of second earner's income, the splitting advantage clearly increases (in absolute terms) with increasing pre-tax household income. The relative share of the splitting advantage, however, does not follow a monotone trend. For single-earner households, the splitting advantage is 12 % of after-tax household income for couples with a pre-tax income of 50,000 €. This share increases to 14 % (pre-tax income of 75,000 €), and declines to 12 % for households with a pre-tax income of 125,000 €. The upper limit of the splitting advantage according to the tax tariff function of 2002/03, is 9,899 €. It is attained by single-earner households with a pre-tax income amounting to twice the income limit after that the highest tax rate cuts in.

One of the reform proposals that has repeatedly been suggested, the so-called “limited real income splitting”, leaves the “splitting advantage” for married couples with unequal income distribution in place, but reduces its quantitative importance. In this system, married couples are taxed separately, but the spouse with higher income can deduct a tax allowance for support payments; the second earner has to add this tax allowance to his own taxable income (see Figure 1). The tax allowance is limited up to 20.000 € per year and may not exceed 50 per cent of the difference between the incomes of the spouses⁴. Under this regime, income differences up to 40.000 € can be balanced in the same way as under the current income splitting; only for spouses with income differences above this amount, the “splitting advantage” is cut.

In the following sections, we will analyze two hypothetical reforms of the current system of household taxation in Germany, namely (i) a shift to a system of individual income taxation, and (ii) the proposal of the limited real income splitting. It seems unlikely, due to constitutional arguments, that individual taxation for spouses will be introduced in Germany. The second reform proposal, however, has been discussed during the last election campaign by the ruling coalition and it is likely that this proposal will show up in the future. Before we turn to the simulation of the potential labor supply effects of these proposals, we briefly

⁴ It should be noted that without the limitation of the tax allowance, real income splitting would equal the current income splitting in Germany. For a discussion hereon, see Homburg (2000).

summarize the empirical studies of similar reforms of the system of joint taxation in Germany.

2.2 Labor Supply Effects – Previous Empirical Studies for Germany

There are only a few empirical studies that analyze the effects of a reform of household taxation on labor supply of married women and on the income distribution in Germany (Wagenhals and Kraus 1998, Althammer 2000, Spahn, Kaiser and Kassella 1992, Gustafsson 1992). All of these studies are based on the German Socio-Economic Panel Study (GSOEP) and estimate standard labor supply models for married couples, where the focus is on the labor supply response of wives to a shift from the system of income splitting to separate taxation. All these studies are based on the so-called “male chauvinist” assumption (Killingsworth, 1983). That is, it is assumed that the wife’s labor supply depends on her own marginal net wage rate, which is a function of the gross wage rate and the tax function. Policy variations are simulated by a change in the tax function that determines the wife’s marginal net wage rate. The husband’s labor supply decision is assumed to be exogenously given for the labor supply decision of his wife.

Wagenhals and Kraus (1998) analyze numerous policy variations, amongst others individual taxation, income splitting with splitting divisors of 1,6 and 1,8, some variations of limited real income splitting and family splitting⁵. For the case of a shift to individual taxation (which is the only policy reform that is comparable to the simulated reform proposals presented in our paper), Wagenhals and Kraus calculate an increase of the female labor force participation rate of 26 percentage points (from 59% under status quo to 85% under separate taxation).

Althammer (2000) also simulates income tax policy variations on the basis of GSOEP data from the year 1996. Policy shifts to family splitting and various sorts of limited real income splitting are analyzed, with all policy variations modelled to be neutral in tax revenues. Also in this study, the wife’s labor supply depends on the marginal net wage rate and other net household income. Policy shifts are simulated by changes in the marginal wage rate via changing the tax function, assuming that the wife’s income is taxed as the secondary income in the high-tax bracket under the current system of joint taxation. In case of a shift to limited real income splitting (with different tax allowances than the proposal studied in our paper), the female participation rate increases by 0,7 percentage points, from 69,5% to 70,2%.

⁵ In the case of family splitting, the splitting divisor depends on the number of children in the household.

Labor supply effects of a change to individual taxation and to limited real income splitting are also studied in Spahn, Kaiser and Kassella (1992). As in Althammer (2000), these policy variations are set up to be neutral in tax revenues. Female labor supply is modelled as a linear function of marginal net wage rate and other net household income. In case of a policy shift to a form of limited real income splitting, female labor supply, measured in total hours worked by year, increases by 11,8%. The simulated policy reform, however, is not directly comparable to the one we present below, because it includes higher child allowances to achieve revenue neutrality and higher tax allowances for support payments.

Gustafsson (1992) analyzes the labor supply reaction of German women in the case that the Swedish income tax system (individual taxation) were to be implemented in Germany. Female labor supply is estimated by applying a logit model with two alternatives, namely wife's labor supply of 10 hours per week and wife's labor supply of 40 hours per week. These alternatives are compared to the case that the wife does not work at all. Independent variables in the model are the pre-tax wage rate, net average wage rate, given the hours worked per week, and net household income in case the wife is not working. The result, based on GSOEP data from 1984, is an increase of the female participation rate of almost 10 percentage points (from 50,3 to 60%) in case of the introduction of the Swedish income tax system in Germany.

Overall, the majority of these studies finds relatively large labor supply effects of a shift from the current German system of joint taxation with income splitting to some form of separate taxation or limited real income splitting. However, these effects were derived under the assumption of the "male chauvinist" model. We doubt that this hypothesis adequately describes household labor supply in Germany. Furthermore, the studies reviewed above do not take into account that a change in household taxation may not only affect wives' but also husbands' labor supply, presumably in an opposite direction. In the next section, we therefore develop an econometric model of household labor supply based on less restrictive behavioral assumptions which also allows us to simulate the effects of changes in household taxation on husbands' labor supply behavior.

3 Econometric Specification

. In this section, we extend previous work by Steiner (2000) and integrate a household labour supply with a tax-benefit simulation model. Given the complexities of the German tax and income transfer systems and the existence of means-tested social transfers, a detailed specification of the household's budget constraint seems crucial when analyzing the incentive effects of household taxation, and the joint filing of taxes of couples in particular. The model

is estimated on several waves of the German Socio Economic Panel (GSOEP). The simulations are performed for the year 2001.

3.1 The Household Labor Supply Model

There are various specifications of empirical household labor supply models in the literature (for a recent summary see Blundell und MaCurdy, 1999). The most commonly used specifications are the so-called “*male chauvinist*” model and the *household utility model*. As it was already briefly summarized in section 2 above, in the former model it is assumed that the wife takes the husband’s labor supply as given in her own labor supply decision, whereas the husband does not take his wife’s labor supply decision into account in deciding on his own labor supply. In contrast, the household utility (HU) model is based on the assumption that both spouses jointly maximize a utility function in the arguments leisure of both spouses and net household income. In our view, the HU model is a more adequate description of actual household behavior in Germany.⁶ Furthermore, we see difficulties in modelling female labor supply as a function of the marginal tax rate, as in a system of joint taxation, the determination of the individual marginal tax rate is not trivial. We will therefore base our estimation of male and female labor supply on the hypothesis of household utility maximization.

To make the household labor supply model tractable, we assume that the labor supply decisions of the household head and the spouse can be separated from the labor supply decisions of all other household members. That is, it will be assumed that other household members’ labor supply does not affect the spouses’ joint labor supply decision.

In contrast to traditional labor supply studies, we model hours supplied by the household as a categorical rather than as a metric variable. This form of modelling takes into account the fact that hours of work are heavily concentrated at particular hours, such as 0, 15, 20 and 40 hours for women, and zero and 40 hours for men. This peculiar hours distribution cannot adequately be approximated by specifying a continuous hours distribution. Second, the specification of hours categories reduces measurement errors in the number of hours actually worked. Thirdly, and most importantly, the specification of a relatively small number of hours categories leads to a tremendous reduction in the computational burden of calculating

⁶ The more recent „collective“ models of household labor supply do not specify a common utility function of the household but, starting from individual utility function and taking into account strategic interactions between the spouses, derive optimal (pareto-efficient) sharing rules for income and leisure within the household (see, e.g., Blundell and MaCurdy, 1999, section 7.2 for a summary). The empirical identification of this type of model is very demanding and, so far, the application of this approach to the empirical analyses of practical policy problems has been rather limited.

the potential net household income at each possible hours choice. This simplification, in fact, is a prerequisite for an adequate specification of the budget constraint given the complexities of the German tax-benefit system.

The household's labor supply decision is modelled by a utility function which is assumed to depend on the leisure time of the male (L_m) and the female (L_f) spouse as well as on real net household income (Y). Following van Soest (1995), we assume that the household's utility index for a particular hours category, k , can be modelled by the following translog function:

$$(1) \quad U_k(x_k) = x_k' A x_k + \beta' x_k + \varepsilon_k,$$

where $x = (y, l_m, l_f)'$. The components of x are the (natural) logs of net household income, leisure of the husband and the wife, respectively. These components enter the utility function (1) with linear, quadratic and cross terms between the spouses' leisure terms and household income. The matrix A , with elements α_{ij} , $i, j = (1, 2, 3)$, contains the coefficients referring to the non-linear terms, the vector β_j , $j = (1, 2, 3)$, the corresponding coefficients of the linear terms. ε is a stochastic error term accounting for factors affecting the household's utility other than leisure and income. The distribution of this error term will be specified below.

The advantage of this functional form specification relative to more restrictive specifications of preferences, such as the Cobb-Douglas or CES utility functions, is its flexibility. In particular, equation (1) allows for the dependence of the utility of one spouse's hours of leisure on the other spouse's leisure as well as the utility of each spouse's leisure to depend on the level of net household income.

In the *HU* model, the utility index should be concave in household income and, for given household income, be increasing in both spouses' leisure time (provided working hours were initially positive). Moreover, the first derivative of the utility index with respect to leisure time should, *ceteris paribus*, be positive for both spouses, provided leisure is a normal good, while the second derivative is expected to be negative. The cross-substitution effect between the two spouses' leisure time is theoretically ambiguous. That is,

$$\begin{aligned}
& \frac{\delta U(\cdot)}{\delta y} > 0; \quad \frac{\delta^2 U(\cdot)}{\delta y^2} < 0; \\
(2) \quad & \frac{\delta U(\cdot)}{\delta l_f} > 0; \quad \frac{\delta U(\cdot)}{\delta l_m} > 0; \\
& \frac{\delta^2 U(\cdot)}{\delta l_f^2} < 0; \quad \frac{\delta^2 U(\cdot)}{\delta l_m^2} < 0; \quad \frac{\delta^2 U(\cdot)}{\delta l_f \delta m} = ?; \quad \frac{\delta^2 U(\cdot)}{\delta l_m \delta f} = ?
\end{aligned}$$

These theoretical implications can be tested by calculating respective derivatives of the utility index for each household evaluated at the parameter estimates from the econometric model described below. The sign of the cross effects depend on whether the two spouses' leisure time are substitutes or complements. The latter seems more likely to be the case because leisure spent with the spouse is probably valued higher than an equivalent amount of time spent alone. Of course, this ultimately is an empirical question which can only be resolved on the basis of econometric work.

Given the assumption of joint maximization of household utility, the household will choose hours category k if, in probability terms, the associated utility index, U_k exceeds the utility in any other possible alternative l , i.e.:

$$(3) \quad P(U_k > U_l) = P((x'_k A x_k + \beta' x_k) - (x'_l A x_l + \beta' x_l) > \varepsilon_k - \varepsilon_l), \quad \forall l \neq k$$

To obtain an estimable econometric specification of the household labor supply model described in the previous section, we have to specify a distribution of the stochastic component of the utility function, i.e. ε_k . Assuming that ε_k is distributed identically across all hours categories according to an extreme-value distribution, the difference of the utility index between any two hours categories follows a logistic distribution. As it is well known (McFadden, 1973) under this distributional assumption the probability of choosing alternative k relative to alternative l can be described by a Conditional Logit Model (CLM), i.e.:

$$(4) \quad P(U_k > U_l) = \frac{\exp(x'_k A x_k + \beta' x_k)}{\sum_m \exp(x'_m A x_m + \beta' x_m)}, \quad \forall l \neq k,$$

where the summation sign is defined over all possible alternatives, i.e. hours categories.

For given levels of income and leisure for both spouses, household utility also depends on certain household characteristics, such as the age and the health status of both spouses as well as the number and age of children in the household. This dependence is accounted for in

the model by specifying the parameters β_j as functions of these variables. The specification of these functions may differ by gender, as it seems likely that children in the household have different effects on men's and women's leisure time.

As specified here, the CLM only identifies parameters of variables which vary between alternatives. Variables with no variation across alternatives drop out of the estimation due to the fact that only differences in the utility index between alternatives are compared here. Hence, the estimation of income effects relies on the differences in the level of net household income between the hypothetically chosen hours categories rather than on the income level itself. Characteristics specific to the household or the spouses, like the presence of children, disability or age are identified by the assumption that their effects on household utility depend on the hours category.

3.2 Data and Variables

Estimation of the labor supply model is on data from the German Socio-Economic Panel (GSOEP).⁷ The GSOEP is a representative sample of private households living in Germany with detailed information on household incomes, hours worked and household structure. This information is required for both the estimation of the labor supply model and the calculation of hypothetical levels of net household incomes relevant for the simulation of income tax changes. The analysis is restricted to household members who can be expected to vary their labor supply to changes in potential net income. Hence, pensioners, students in full-time education and women on maternity leave are not included in the sample. The self-employed and civil servants are also excluded because their labor supply behavior can be expected to differ qualitatively. Furthermore, households with missing values in any of the variables entering the calculation of the net household income in alternative hours categories had to be dropped from the sample. For the construction of the income variables described below we use data from waves 1999 – 2002, the labor supply estimates refer to wave 2001. Descriptive statistics on some key variables of our model are given in Table A1 in the appendix.

Hours Categories

The GSOEP contains information on the number of weekly hours actually worked in the month before the interview, the number of hours „normally“ worked and actually paid overtime hours. The hours variable used here includes paid overtime, i.e. the number of

⁷ A description of the GSOEP can be downloaded from www.diw.de/soep; see also Haisken-DeNew and Frick (2001).

actual hours worked in the reference month. This is the number of normal hours plus paid overtime hours. If a person working overtime hours did not answer the question whether overtime hours are compensated by cash or by shorter working time later on, it was assumed that half of the difference between actual hours worked and average normal hours will be paid (and the other half remunerated by holidays). This part was added to normal average hours.

The definition of the hours categories is motivated by both economic considerations and the actual distribution of hours in the sample. Although a relatively fine aggregation of hours into categories seems desirable in order to realistically approximate the household's budget constraint, the actual distribution of hours in the sample severely restricts the number of possible categories. In particular men typically do not work part-time and their actual working hours are heavily concentrated between 35 and 40 hours per week. Furthermore, for couples the feasible number of categories is not only restricted by the distribution of hours within one gender, but by the bivariate distribution of the two spouses' working hours. The actual distribution of households in the sample across hours categories is given in Table 1.

Table 1—Distribution of households across hours categories

Hours		Men			
		0		1 – 40	
Women	0	71	(4.6)	251	(16.2)
	1 – 15	34	(2.2)	112	(7.2)
	16 – 34			186	(11.9)
	35 – 40	55	(3.5)	189	(12.2)
	> 40			58	(3.7)
				211	(13.6)
				72	(4.6)
				133	(8.6)
				113	(7.2)
				66	(4.2)

Notes: The first number refers to the absolute frequency in the sample, the second number (in parentheses) to the corresponding relative frequency in percent.

Source: Own calculations, GSOEP, wave 18 (2001).

Because of the small number of men in part-time employment in our sample, only three categories could be specified for them, namely: non-employment (unemployment and non-participation in the labor force), 1 – 40 hours, and more than 40 hours (overtime). Table 1 shows that about a third (34.4%) of all wives in the sample living in couple households do not work, 34.5 % work part-time (defined as working less than 35 hours a week), and a third (30.8%) work more than 35 hours a week, i.e. full-time. About 10% of all husbands in couples household were unemployed in 2001. At the same time, more than a third (38.2%) of all husbands worked overtime (more than 40 hours). In about 4 % of all couple households both spouses worked overtime.

The specification of the econometric model is based on the assumption that each household compares the expected utility obtained from net income and the two spouses'

leisure associated with the choice of a particular hours category. Here, it is assumed that this comparison is based on the average number of hours worked in a particular category. By subtracting this number from the maximum time budget the household allocates to market work, the average number of hours of leisure corresponding to the choice of a hours category is obtained. For the empirical analysis, the maximum time budget allocated to market work is assumed the same for each household member and is set to 80 hours per week. To test the sensitivity of estimation results with respect to this assumption, the model was also estimated with alternative values for the maximum time budget. Estimation results proved rather insensitive to realistic changes in the value chosen for this parameter. For example, changing the maximum number from 80 to 60 hours per week had very little effect on the estimation results.⁸

Net Household Income

The derivation of net household income is based on a detailed tax-benefit simulation model which includes all relevant components of the German tax and transfer system.⁹ The tax-benefit simulation model is based on the GSOEP and uses data for the period 1999 to 2002. The simulations refer to the year 2001. Retrospective data on incomes and an individual's labor force state contained in the calendar data for the year 2002 are required to calculate some components of household income for the year 2001. Data for the years 1999 and 2000 are required to determine eligibility of unemployment benefits and derived unemployment assistance payments. A detailed description of the tax-benefit simulation model may be obtained by the authors upon request, here we briefly describe its main components.

As regards the calculation of taxable income, earnings from dependent employment, income from capital (interest), property rents, and other income are added to get gross household income. For the great majority of households the most important income component is earnings from dependent employment. For employed people, information on gross monthly earnings in the month before the interview is collected in the GSOEP. This information together with the hours information described above is used to calculate gross hourly wages. Hypothetical monthly earnings for each of the hours categories defined in the previous section are calculated by multiplying gross hourly earnings by the respective average number of working hours in each category. For couples, gross monthly earnings of the household are the sum of the two spouses (hypothetical) earnings in each hours category. For

⁸ van Soest (1995) reports a similar result in his study for the Netherlands.

⁹ A description of this tax-benefit simulation model can be obtained from the authors upon request.

employed persons, it is assumed that the individual gross hourly wage in their actual hours category would be the same in each hours category. For persons not employed in the month preceding the interview, gross hourly wages are estimated on the basis of empirical wage equations. Due to item non-response wages are also missing for a non-negligible share of employed persons, for whom hourly wages are also imputed on the basis of these wage equations. Estimation results for these wage equations are available from the authors on request.

Given (estimated) hourly wages, potential monthly earnings associated with each hours category are calculated for each individual in the sample by simply multiplying the hourly wage with the average number of hours worked per month in each category. Potential gross earnings of each household in each of the 13 hours categories are obtained by simply adding both spouses potential earnings for all categories with positive hours. These estimates of potential monthly earnings are the starting point for the calculation of net household income.

Employees social security contributions and the income tax are deducted from gross household income and social transfers are added to it to get net household income. Social transfers include child allowances, child-rearing benefits, educational allowances for students and apprentices, unemployment compensation, the housing allowance, and social assistance. Taxable income is calculated by deducting certain expenses from gross household income. The income tax is calculated by applying the income tax formula prevailing in 2001 to taxable income.

Income from self-employment is not taken into account here, because the self-employed and their relatives are not included in the analysis. Information on income from capital and rents is directly taken from the respective questions in the GSOEP. It is well known that answers to the question on capital income in particular is very unreliable because of the perceived sensitivity of this question, and there is not much one can do about this on the basis of the GSOEP. This problem does not seem too severe in the present context because it would affect estimation results only to the extent that capital income varies with the choice of a particular hours category. However, it may affect the calculation of the hypothecial level of means-tested income support and thereby indirectly also the choice between employment and non-employment in some cases.

Other Variables describing Household Preferences

For various reasons, household preferences for leisure and income may differ substantially between East and West Germany and between natives and foreigners. Preferences may also differ with respect to other individual and household characteristics, such as age, disability

and the presence of children in the household. Given their strong work-orientation in the former GDR, East German women may have stronger preferences for work than West German women. On the other hand, compared to married women of foreign nationality, West German women may have a relatively strong work orientation. In general, it seems very likely that households with small children have a stronger preference for “leisure” (non-market work) than those without children, and that in couple households the dependence of leisure on the presence of children also varies by gender. Also, it seems likely that preferences for leisure may also depend on age and on disability status.

Due to the relatively small number of households in some of the hours categories, separate estimation of the labor supply models by region and by nationality is not feasible. Structural differences in labor supply behavior between natives and foreigners as well as between East and West Germany are therefore accounted for by interaction terms. These are specified as dummy variables for nationality and region on the one hand and (the logs of) net household income and the leisure variables on the other. Because of the very small numbers of foreigners living in East Germany, interaction terms for foreigners refer to West Germany only. The leisure variables are also interacted with age and age squared and dummy variables for disability status and, for women, with dummies for the presence of children differentiated by age groups.

On the basis of the data described in the previous section the labor supply model specified in the previous section was estimated by the Maximum Likelihood Method. Estimation Output can be found in Appendix 2. Because net household income and leisure time of the two spouses enter the household utility function in linear and quadratic terms as well as interaction terms between each other, the interpretation of single estimated coefficients is not particularly revealing. Therefore, we calculated wage elasticities that can be compared with results from other econometric studies. These elasticities are reported in Appendix 3.

4 Simulation Results

Following the discussion in section 2, we simulate two hypothetical alternatives to the current system of household taxation in Germany. Although it is very unlikely to be implemented, we analyze the income and labor supply effects of a shift to individual taxation as an extreme reference case. Secondly, we simulate a shift to the limited real income splitting, which leaves the splitting advantage for married couples in place, but reduces its amount for middle- and

high-income households. We first present the income effects of the two policy reforms under the assumption of fixed labor supply¹⁰ and then show the simulated labor supply effects.

4.1 Income Effects with Constant Labor Supply

The income change for each household depends on the absolute amount of household income and on the income distribution between the spouses. Therefore, we present the income changes for married couples by the 13 hours categories defined in Table 1 above, by income deciles, and by the number of children.

As expected, income changes are much higher for single-earner couples than for two-earner couples. For spouses with equal labor force participation, the income change gets very small. A shift to individual taxation causes higher differences of the income changes between working hours categories than a shift to limited real income splitting. The modified splitting reform leaves 50 per cent of all married couples (in eastern Germany even 75 per cent) without income change at all. This is a consequence of the possibility to balance income inequalities between spouses of up to 40.000 € under limited real income splitting.

Income changes by net household income deciles do not follow a clear pattern, because the income distribution between spouses is not taken into account in this depiction. In order to isolate the effect of the income distribution between spouses on the income change due to the policy shift, Figure 3 presents the income changes by share of income of the second earner for households with constant pre-tax income. Again it can be seen that a shift to individual taxation causes much higher income changes than the modified splitting. In households with a pre-tax income between 48.600 and 53.700 € per year, only single-earner couples face a decline in net monthly income under limited real income splitting.

¹⁰ A similar analysis based on the 1995 income tax data is contained in Bach and Buslei (2003).

Table 2—Changes in net household income for married couples resulting from a policy shift to separate taxation or limited real income splitting (€/month)

	<i>Individual Taxation</i>		<i>Limited Real Income Splitting</i>	
	East	West	East	West
All (mean)	72	206	7	27
All (median)	21	189	0	0
<i>Mean income changes by hours category^{a)}</i>				
0 / 0 hours ^{a)}	0	6	0	0
0 / 22	115	63	13	9
0 / 40	160	228	26	39
38 / 0	184	329	33	57
38 / 9,5	120	215	0	2
38 / 24	49	65	0	1
38 / 38	10	15	0	0
38 / 47	36	21	1	0
49 / 0	255	474	42	103
49 / 9,5	157	301	13	28
49 / 24	46	121	0	6
49 / 38	16	64	0	1
49 / 47	31	32	0	0
<i>Mean income changes by income deciles^{b)}</i>				
1 st (893) ^{b)}	79	58	2	1
2 nd (1597)	133	189	22	27
3 rd (1927)	125	225	18	37
4 th (2207)	96	201	8	24
5 th (2470)	37	191	2	19
6 th (2733)	58	151	9	12
7 th (3040)	47	142	3	10
8 th (3357)	13	160	0	10
9 th (3826)	37	172	0	12
10 th (5173)	92	419	3	103
<i>Mean income change by number of children^{c)}</i>				
No children ^{c)}	78	159	8	22
1 child	59	186	4	22
2 children	67	235	7	31
3 or more children	124	260	16	38

Notes:

a) Hours categories of two spouses (husband / wife), see table 1, section 3.

b) Income deciles refer to net household income per month; numbers in parentheses refer to the respective decile means for East and West Germany (in €/month).

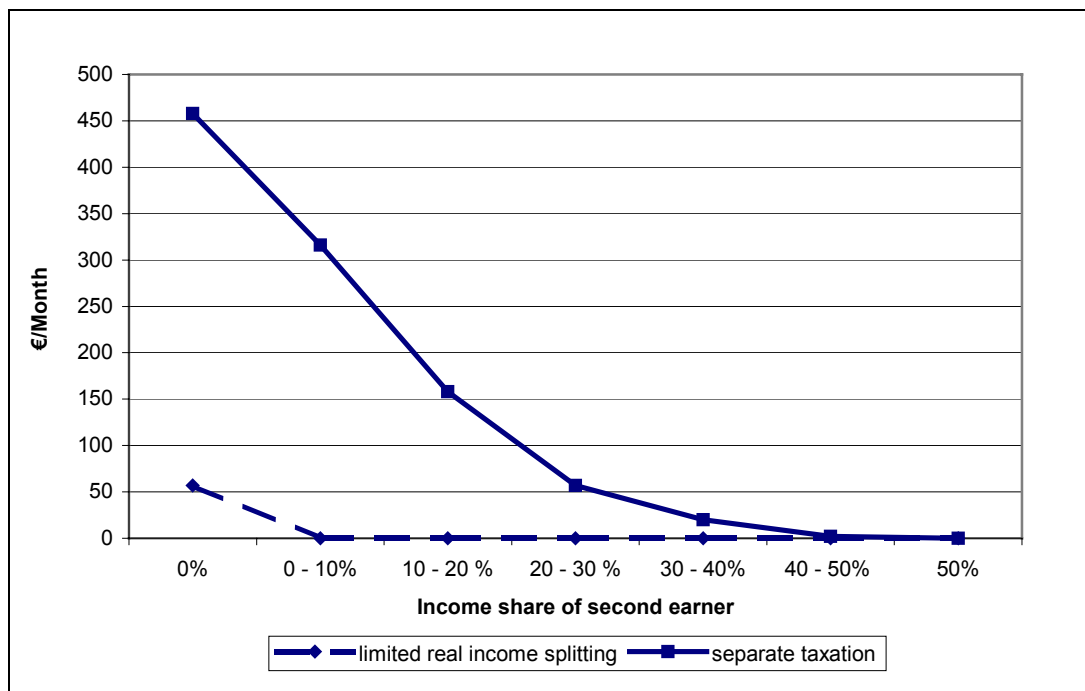
c) Number of children under 16 years living in the household.

Source: Own calculations, GSOEP, wave 18 (2001).

Regarding the income changes by number of children in the household, the pattern is as expected in West Germany: The more children living in the household, the higher is the

income change under both, individual taxation and limited real income splitting. This is due to the fact that with increasing number of children, the participation rate of women and therefore also the equality of the distribution of household income declines. Interestingly, this pattern cannot be found in eastern Germany. In this group, households with one child face the smallest income change. The reason for this is that although the participation rate of women declines with increasing number of children, the income share of the second earner in households with one child is on average higher than in households without children.

Figure 3—Income changes for married couples with constant pre-tax household income (48.600 – 53.700 €/year) by income share of second earner



Source: Own calculations, GSOEP, wave 18 (2001).

4.1 Labor Supply Effects

The simulated labor supply effects of the two alternative tax reforms are summarized in Table 4. Simulation results refer to changes in both labor force participation rates and changes in total hours. The corresponding labor supply effects in terms of absolute changes in the number of persons are given in Table 5. These numbers were derived by multiplying simulated percentage changes in labor force participation rates by the respective number of households in the GSOEP sample and their respective weighting factor. Note that these estimates refer to the sample of married couples on which we have estimated the labor supply model, i.e. these numbers do not include the self-employed, civil servants, people younger than 20 or older than 65 years, severely disabled people and women on maternity benefit.

Labor supply effects caused by the two policy shifts depend on the income changes by hours categories and the labor supply elasticities of the various groups. Consistent with the pattern of these two factors, the changes in participation and in total hours worked are greater under individual taxation than under limited real income splitting, greater for women than for men and greater in the West than in Eastern Germany.

In the case of a shift to individual taxation, the participation rate of married women increases by about 3,4 percentage points. In West Germany, this increase is much higher than in East Germany; this seems plausible as the average income change in the East is only a third of the average income change in the West. The effects on total hours worked follow a similar pattern: The increase in total hours of women in the West is more than four times higher than the increase in total hours of women in Eastern Germany. In total, about 410.000 women would join the labor force in case of a shift to individual taxation. A shift to limited real income splitting causes much weaker labor supply effects than a shift to separate taxation. The strongest effects can again be found in the group of women in West Germany. In total, the female labor force would increase by about 113.000 women in this scenario.

Table 4—Labor Supply Effects of Tax Policy Shifts

	<i>Individual Taxation</i>		<i>Limited Real Income Splitting</i>	
	Men	Women	Men	Women
<i>Change in participation rates (in percentage points)</i>				
All households	~ 0.65	3.42	0.04	0.95
West, all	-0.90	4.41	~ 0.03	1.23
West, without children	~ 0.37	3.48	0.12	0.93
West, with children	~ 1.10	4.76	~ 0.00	1.34
East, all	0.05	0.65	0.06	0.17
East, without children	0.08	0.48	0.07	0.12
East, with children	~ 0.03	0.72	0.05	0.19
<i>Change in hours (in percent)</i>				
All households	~ 1.21	9.00	~ 0.00	1.45
West, all	~ 1.62	11.64	~ -0.04	1.89
West, without children	~ 1.02	8.75	0.08	1.31
West, with children	~ 1.84	12.74	~ -0.08	2.12
East, all	~ 0.04	1.54	0.06	0.19
East, without children	-0.03	1.21	0.08	0.13
East, with children	-0.05	1.69	0.06	0.22

Labor supply effects of married men are much smaller than the effects on the labor supply of their spouses. In case of individual taxation, men in West Germany reduce their total hours and also their participation rate declines. This is a result of the incentive to balance the income distribution between the spouses under this tax regime. The effects for men in Eastern Germany are even smaller, which is due to the much smaller income changes for these households. According to our calculations, male labor force would decline under individual taxation by about 60.000 persons and increase by about 4.000 persons in case of limited real income splitting.

Table 5—Labor Supply effects of policy shifts in numbers of persons

	<i>Individual Taxation</i>		<i>Modified Splitting</i>	
	Men	Women	Men	Women
West	-58.810	395.100	2.420	101.000
East	-1.550	11.750	1.240	3.170
All households	-60.360	406.850	3.660	113.170

5 Summary and Conclusions

We have analyzed the potential labor supply effects of a shift from the current system of joint taxation of married couples with income splitting to a system of limited real income splitting, as it has intensively been discussed in the recent election campaign. As a benchmark case, we have also analyzed the potential labor supply effects of a shift to separate taxation, as it is in existence in some other European countries. To this end we have developed a microsimulation model for Germany based on an econometric labor supply model embedded in a detailed empirical tax-benefit model. Our econometric model is based on the hypothesis that married couples jointly maximize a household utility function with both spouses' leisure time and net household income as arguments. This “household-utility” model provides, in our view, a more appropriate specification of actual labor supply behavior of married couples than the alternative specification based on the “male chauvinist” assumption which has been used in previous related studies on the potential labor supply effects of changes in household taxation in Germany.

We find that a shift from the current system of full income splitting to the hypothetical benchmark of separate taxation of married couples would reduce average net household income substantially in West Germany but only little in East Germany. These regional differences are related to differences in labor force participation and part-time work in the two

regions and the fact that the amount of the so-called “splitting advantage” is relatively high for single-earner households of married couples and shrinks quickly with an increasing share of wife’s income in total pre-tax household income. The second tax reform we have analyzed in this paper, the limited real income splitting proposal, would on average have very little effect on net household incomes. In fact, this tax reform would leave 50 per cent of all married couples (in eastern Germany even 75 per cent) without income change at all. This is a consequence of the possibility to balance income inequalities between spouses of up to 40.000 € under limited real income splitting as analyzed here.

Given these small changes in net household income and the relatively small labor supply elasticities of married women derived from our econometric model, it thus comes as no surprise that our simulations results show relatively small labor supply effects of a shift from the current system of full income splitting to the proposed limited real income splitting system. Overall, we find that female labor supply would increase by some 120 thousand persons, the lion’s share of which (almost 90%) would be in West Germany. For the (unrealistic) benchmark scenario of a shift to separate taxation our simulations show that about 400 thousand housewives would be willing to take up work, about 95 percent of them living in West Germany. However, according to our simulation results about 60 thousand husbands would drop out of the labor force following a shift to separate taxation.

The comparison of our simulation results with findings from previous studies summarized in section 2.2 above is rendered difficult by the fact that none of these studies simulates the reform proposal “limited real income splitting” in the way we do. Also the simulations of a shift to individual taxation in Althammer (2000) and Spahn, Kaiser and Kassella (1992) are not comparable to our simulations, because these authors simulate tax revenue neutral alternatives. Gustafsson (1992) simulates a shift to the Swedish tax system, which also goes well beyond the elimination of income splitting. Only Wagenhals and Kraus (1998) simulate a policy shift towards separate taxation similar to our case. They get much higher labor supply effects than we do: The participation rate of married women rises by 26 percentage points, (desired) hours per week increase from 18,1 to 26,4 hours per week. These results are probably due to the authors’ model specification, in particular the hypothesis that married couples labor supply model can be described by the “male chauvinist” model. Hence, in these studies the wife’s net wage rate is used as an explanatory variable, whereas in our model net household income is the relevant variable. Given the nonlinearity in the budget constraint, the net wage clearly is endogenous in the labor supply equation and estimated labor supply elasticities may, therefore, be severely biased.

References

- Althammer, Jörg. 2000. *Ökonomische Theorie der Familienpolitik*. Heidelberg: Physica-Verlag.
- Bach, Stefan and Hermann Buslei. 2003. Verteilungseffekte des Ehegattensplitting, Mimeo, DIW Berlin.
- Blundell, Richard and Thomas MaCurdy. 1999. "Labor Supply: A Review of Alternative Approaches," in *Handbook of Labor Economics*. Orley Ashenfelter and David Card eds. Amsterdam: Elsevier, pp. 1559-695.
- Buslei, Hermann and Viktor Steiner. 1999. Beschäftigungseffekte von Lohnsubventionen im Niedriglohnbereich. Baden-Baden: Nomos.
- Dingeldey, Irene. 2001. "European Tax Systems and their Impact on Family Employment Patterns." *Journal of Social Policy*, 30:4, pp. 653-72.
- Gustafsson, Siv. 1992. "Separate taxation and married women's labor supply. A comparison of West Germany and Sweden." *Journal of Population Economics*, 5, pp. 61-85.
- Haisken-DeNew, John P. and Joachim R. Frick. 2001. *Desktop Companion to the German Socio-Economic Panel Study (GSOEP)*: DIW Berlin.
- Homburg, Stefan. 2000. "Das einkommensteuerliche Ehegattensplitting." *Steuern und Wirtschaft (StuW)*, 30:3, pp. 261-68.
- Killingsworth, Mark R. 1983. *Labor Supply*. Cambridge: Cambridge University Press.
- McFadden, Daniel. 1973. Conditional Logit Analysis of Qualitative Choice Behavior, in Paul Zarembka (ed.), *Frontiers in Econometrics*, Academic Press.
- Spahn, Paul B., Helmut Kaiser, and Thomas Kassella. 1992. "The Tax Dilemma of Married Women in Germany." *Fiscal Studies*, 13:2, pp. 22-47.
- Steiner, Viktor. 2000. "Können durch einkommensbezogene Transfers an Arbeitnehmer die Arbeitsanreize gestärkt werden? Eine ökonometrische Analyse für Deutschland." *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung*, 33:3, pp. 385-95.
- van Soest, Arthur. 1995. "Structural Models of Family Labor Supply: A Discrete Choice Approach." *Journal of Human Resources*, 30:1, pp. 63-88.
- Wagenhals, Gerhard and Margit Kraus. 1998. "Neuansätze des Familienlastenausgleichs," in *Frauenpolitische Aspekte im Einkommensteuerrecht, Teil 3*. Arbeit und Sozialordnung Hessisches Ministerium für Frauen (ed). Wiesbaden.
- Zimmermann, Klaus F. 1993. Labour Responses to Taxes and Benefits in Germany, 192-240, in: A. B. Atkinson and G. V. Mogensen (eds.): *Welfare and Work Incentives. A North European Perspective*, Oxford University Press.

Appendix 1: Descriptive Statistics

a) Participation rates and average working hours in the sample

	<i>East Germany</i>		<i>West Germany</i>	
	Men	Women	Men	Women
<i>Participation rates in per cent</i>				
All married couples	84	80	90	72
Married couples without children	73	72	81	80
Married couples with children	89	82	93	69
<i>Average working hours per week</i>				
All married couples	32	23	35	12
Married couples without children	26	23	31	17
Married couples with children	34	23	37	11

b) Average net household income by hours category (€/month)

Hours Category (husband's hours / wife's hours)	<i>East Germany</i>	<i>West Germany</i>
0 / 0	908	1331
0 / 22	1268	1574
0 / 40	1659	1997
38 / 0	1828	2544
38 / 9,5	1927	2644
38 / 24	2636	3081
38 / 38	2852	3222
38 / 47	3255	3306
49 / 0	2028	3342
49 / 9,5	1987	3270
49 / 24	2792	3620
49 / 38	2977	3787
49 / 47	3363	3995

Source: Own calculations on the basis of GSOEP (wave 16) 1999.

Note: In the sample shown, only married couples are included. Further, all households with head of household or spouse below 20 years or over 65 years are excluded, as well as civil servants, self-employed, students, women on maternity leave and pensioners.

Appendix 2: Estimation Output

Labor Supply Model: Estimation Output

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Conditional (fixed-effects) logistic regression   Number of obs   =      17888
                                                    LR chi2(28)     =      717.38
                                                    Prob > chi2     =      0.0000
Log likelihood = -3170.6793                     Pseudo R2      =      0.1016

```

	kat	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
eknpaar		1.394254	6.434617	0.22	0.828	-11.21736	14.00587
eknp2		.3989325	.3488754	1.14	0.253	-.2848508	1.082716
eknp_lzm		-.7384295	.4500171	-1.64	0.101	-1.620447	.1435877
eknp_lzf		-.5097891	.4370932	-1.17	0.243	-1.366476	.3468978
dlzm		35.25983	7.670007	4.60	0.000	20.22689	50.29277
dlzm2		-2.870907	.4144494	-6.93	0.000	-3.683213	-2.058601
dlzf		30.04735	7.459591	4.03	0.000	15.42682	44.66788
dlzf2		-2.11829	.4479901	-4.73	0.000	-2.996335	-1.240246
dlzmf		-.9286424	.5869737	-1.58	0.114	-2.07909	.221805
dlzm_dtm		-.6464714	.4549072	-1.42	0.155	-1.538073	.2451303
dlzf_dtf		-.2763634	.4727155	-0.58	0.559	-1.202869	.6501421
dlzmf_dt		.1099072	.1867094	0.59	0.556	-.2560366	.4758509
eknp_dt		-3.580955	5.177612	-0.69	0.489	-13.72889	6.566977
eknp2_dt		.2617379	.3537322	0.74	0.459	-.4315645	.9550403
dlzm_o		-6.748873	3.168195	-2.13	0.033	-12.95842	-.5393239
dlzf_o		-8.018181	2.938616	-2.73	0.006	-13.77776	-2.2586
dlzmf_o		1.244268	.7906832	1.57	0.116	-.305443	2.793978
eknp_o		6.532783	2.203671	2.96	0.003	2.213667	10.8519
eknp2_o		-.5541092	.1662994	-3.33	0.001	-.8800501	-.2281684
dlzm_alt		-.1471782	.1031385	-1.43	0.154	-.349326	.0549696
dlzm_a2		.2653421	.1119051	2.37	0.018	.0460122	.4846719
dlzf_alt		-.3037612	.1093476	-2.78	0.005	-.5180786	-.0894438
dlzf_a2		.4735482	.1276541	3.71	0.000	.2233507	.7237457
lzm_ewm3		1.098257	.7255214	1.51	0.130	-.3237386	2.520253
lzf_ewm3		1.082561	.9122648	1.19	0.235	-.7054452	2.870567
dlzf_k36		3.085537	.3489496	8.84	0.000	2.401608	3.769465
dlzf_k16		1.963428	.2468159	7.96	0.000	1.479677	2.447178
dlzf_k17		-.525801	.245907	-2.14	0.032	-.043832	-1.00777

Selected variable names:

```

eknpaar      net monthly household income
dlzm / dlzf  leisure time of husband / wife
eknp_lzm     interaction term between household income and husband's leisure time
dlzm_dtm     interaction term between husband's leisure time and nationality dummy
              (German citizen=1)
eknp_dt      interaction term between household income and nationality dummy
eknp_o       interaction term between household income and regional dummy (east=1)
dlzm_alt     interaction term between husband's leisure time and his age
dlzf_k36     interaction term between wife's leisure time and kids-dummy (kids
              under 6 years in household: yes=1)

```

Appendix 3: Wage Elasticities of Labor Supply

The quantitative implications of the labor supply model can best be summarized by hours and participation elasticities with respect to given percentage change in the gross wage rate. These elasticities can be calculated with respect to a change in the own and the spouse's wage. Although a closed-form expression of these wage elasticities is not available for the translog utility function estimated here, they can be calculated from the simulated change in estimated hours and participation rates to an exogenous change in the gross wage rate. At given gross wages, the expected number of hours worked as well as the labor force participation rate can be calculated for each sample observation. Comparing these values to the simulated hours and participation rates resulting from a given percentage change in gross wages yields hours and participation elasticities. In the following table we summarize our elasticity estimates for various population groups.

Overall, estimated own wage elasticities are rather small: measured by hours worked a 1% wage increase raises labor supply by about 0.3% for wives and by about 0.2% for husbands. Estimated elasticities for wives living in West Germany are markedly larger than for East German wives. These regional differences could be related to the greater importance of demand-side restrictions on labor supply as a result of the still very depressed labor market in East Germany. However, it could also be related to a different preference structure of East Germans due to their previous work experience under socialism, or to institutional differences. Similar differences are also observed with respect to participation elasticities. In contrast, cross-wage elasticities between wives and husbands are negligible in both regions and for all household groups considered here. This holds for both hours worked and labor force participation rates.

Comparing labor supply elasticities estimated here with those from previous German studies is rendered difficult by differences in model specification and sample definitions. Overall, estimated elasticities vary greatly between the various studies but all tend to find that (uncompensated) wage elasticities are low for men. For married women, estimated wage elasticities with respect to hours vary between zero and 1.7. Only a few studies also report labor force participation elasticities, and these vary between about 0.8 and 3.3 (for summaries see Zimmermann, 1993, and Steiner, 2000).

Table 2—Estimated labor supply elasticities for married spouses (household labor supply model with translog utility function).

	<i>Male gross hourly wage +1%</i>		<i>Female gross hourly wage +1%</i>	
	Men	Women	Men	Women
<i>Change in participation rates (in percentage points)</i>				
All married couples	0.14	-0.02	-0.01	0.10
West, all	0.16	-0.03	-0.01	0.12
without children	0.22	-0.03	-0.02	0.12
with children	0.15	-0.03	-0.01	0.12
East, all	0.07	0.01	0.01	0.04
without children	0.10	0.01	0.01	0.04
with children	0.06	0.01	0.01	0.04
<i>Change in hours (in percent)</i>				
All married couples	0.21	-0.10	-0.01	0.32
West, all	0.23	-0.15	-0.02	0.39
without children	0.32	-0.15	-0.04	0.37
with children	0.23	-0.13	-0.01	0.39
East, all	0.10	0.02	0.01	0.13
without children	0.15	0.00	0.01	0.12
with children	0.08	0.02	0.01	0.13