Chapter 5

Conclusion

5.1 Main Findings

The contribution of this dissertation to the existing literature on the estimation of mothers' labor supply and evaluation of family policy reforms consists of extending the standard labor supply estimation framework to include the demand for childcare. This behavioral model is embedded in a tax-benefit simulation model that is used for a detailed calculation of the households' budget constraint including childcare costs.

One first important finding of the analysis is that there is considerable excess demand for subsidized child care in Germany, in particular for children under three years. A third of all children in this age group do not have access to such a slot altough their parents demand one. For children between three and six years, rationing of childcare is found to be present only to a small extent, however, access restrictions to afternoon care for children between 7 and 10 years are almost as severe as for children below three years. Given this excess demand for subsidized childcare, childcare costs cannot be simply modeled as parents' fees to childcare centers as has been suggested in the previous literature. In the presence of rationing, not all parents have access to a childcare slot at the "price" of average parents' fees. Instead, I suggest a measure of "expected costs of childcare" that consist of a weighted

average of the costs to formal childcare which are low due to subsidies, and the price for childcare on the private market, which comes at considerably higher cost. The calculation of the weights is based on a partial observability model of the demand and supply of childcare, which can be used to predict the individual probability to be rationed with respect to formal childcare for every child in the sample. Including the suggested measure of "expected childcare costs" in the budget constraint of households, has the advantage that both dimensions of childcare - its costs and its accessability - can be analyzed. Thus, the model can be used to evaluate childcare policy reforms that aim at increasing availability of center-based childcare as well as reforms that affect the parents' fees to existing childcare slots.

If childcare costs are subtracted from net household income according to the mother's working hours, the work incentives for mothers with children under seven years are found to be very low. It can be shown that the high childcare costs for young children, that result from the low availability of childcare for this age group add on to the negative work incentives induced by the joint taxation of married couples and the high withdrawal rates of transfers such as the parental leave benefit. For example, mothers whose youngest child is under three years can increase monthly family income only by 30 percent if they start working and take up a full-time job. For mothers who have three or more children under seven years, it does not pay to take a full time job at all.

The results of the estimation of the behavioral model of labor supply and child care choices that draws on the calculation of disposable income at different working states, show that the parameters of the utility function lead to plausible estimates as far as the theoretical predictions of its derivatives with respect to income and leisure are concerned. Whether formal childcare has a positive or negative influence on the mother's utility can not be predicted on the basis of theoretical considerations. As the empirical analysis shows, for the majority of mothers, in particular mothers with young children living in west Germany, formal childcare decreases their utility.

However for 50 percent of mothers whose youngest child is between three and six years old, formal childcare has a positive influence on utility. This result reflects differences in attitudes towards non-parental childcare.

Another finding of this study is that the labor supply elasticities obtained from the estimation of the behavioral model do not differ significantly from those obtained in previous studies that neglect childcare costs as part of the budget line and estimate labor supply without taking into account the simultaneity of the childcare decision, such as Steiner and Wrohlich (2004). While this is reassuring evidence for estimations of female labor supply that neglect costs of childcare, including childcare costs in the way as suggested here is required if labor supply elasticities with respect to childcare costs shall be estimated. These elasticities, in turn, are necessary for any evaluation of the effects of childcare policy reforms on mothers' labor supply.

5.2 Policy Implications

The evaluation of childcare reforms based on this model shows that targeting subsidies to children of different age groups affects the mothers' labor supply reactions and the distribution of incomes in a different way. A policy reform that increases availability of childcare for children under three years, conditioned on the mother being engaged in market work, leads to a greater increase in overall labor supply than a reform that cuts parents' fees to existing childcare slots for children between three years and school entry age. The first reform comes close to the "TAG" law that has been implemented in 2005. The second reform has not been implemented so far everywhere in Germany but several federal states have decided to introduce this reform in the following years.

The differing effects on mothers' labor supply are not only influenced by the age group of children at target but also by the fact that the first reform conditions subsidies on the working status of the mothers, while under the second reform,

subsidies are provided no matter whether mothers are working or not. Surprisingly, both reforms would lead to similar costs. If behavioral changes and their effects on income taxes and social security contributions are taken into account, reform 1 would cost 825 and reform 2 would cost 910 million Euro per year. In order to model a balanced fiscal budget, the child benefit for children up to six years is adjusted. Under childcare reform 1, the child benefit has to be cut by 15 Euro, under reform 2 by 16.5 Euro per month.

On average, disposable household income increases under both reforms. This is due to the rise in labor supply of mothers. Although the labor supply effects are higher under childcare reform 1, the average increase in income is lower than under reform 2. This can be explained by the fact that increasing working hours leads to a lower income gain for mothers of young children since childcare costs are higher for this group, even after the reform. An analysis of income changes by deciles shows that reform 1 is more beneficial for families in the lower half of the income distribution, while the opposite is true for childcare reform 2. This is due to the fact that families with very young children have lower incomes than families with children aged three to six years. Moreover, parents' fees to childcare slots currently increase with household income. Thus, abolishing these fees results in a greater relief for high-income than for low-income households.

The change in household income, however, is not a comprehensive measure of the change in households' well-being after a reform. Households adjust their behavior with respect to labor supply and the utilization of non-parental childcare. These adjustments lead to changes in household utility, that can be measured using money metrics of utility such as the compensating variation. An analysis of changes in household welfare shows that under childcare reform 1, families on average face a small loss of household welfare that increases as soon as more weight is put on low-income households. Childcare reform 2, however, leads to an increase in household welfare. The reason for the difference in the welfare effects resulting from the two

childcare reforms can not only be explained by the difference in income changes, but also by the fact that external childcare leads to an increase of mother's utility for the majority of all households with a child between three and six years but only for 1 percent of households with a child under three years.

These results, however, are to some extent driven by the assumption that all fiscal resources needed for these reforms have to be financed by the group of families with children up to six years. If the society would be willing to redistribute resources from the general public towards families with young children, the welfare analysis would lead to different results. Moreover, it has to be mentioned that the welfare effects analyzed here only consider the immediate effects on levels of household income and leisure. Yet, several empirical studies have shown that attending high-quality childcare from an early age on has long-term effects on abilities of children that have not been considered in this analysis.

Simulations of a family tax splitting that is currently being suggested to substitute the present system of income splitting for married couples confirm previous studies in the finding that this reform leads to very minor changes of families' disposable incomes. If the current higher-yield test of the tax gain against the child benefit is maintained, only high-income families with three or more children would benefit in the form of higher tax gains. Non married couples and single mothers would also benefit from this reform, however, only to a small extent. It can be concluded from these simulations that the instrument of a child allowance is very similar to the tax gain that would be implied by a family tax splitting, in particular if these tax gains are to be limited such as practiced in France. Thus, if it is the goal of a reform to increase the support for families with three or more children, the existing child benefit and the tax allowance could simply be increased from the third child onwards. Moreover, if more support is to be granted towards children of non married parents, the income tax splitting could be extended for cohabiting spouses. For single parents, the existing single parents' tax allowance could be increased.

Considerable increases in mothers' labor supply or the demand for childcare, however, can not be expected of these reforms, because the high marginal tax rates on secondary earners' wages retain unchanged. If the reconciliation of work and family life is a major goal of family policy reforms, a family tax splitting could hardly be considered as an advance.

On the other hand, the simulation of a shift from joint to individual taxation shows that high efficiency gains could be achieved for the majority of families with children up to six years. Under this reform, income tax revenues would rise due to the abolition of the "splitting advantage". Moreover, this reform would lead to a large increase in mothers labor supply: the labor force participation rate of mothers with young children is predicted to rise by as much as 5 percentage points, which would in turn lead to increases in income tax revenues and social security contributions. For the sub-group analyzed here, namely families with at least one child up to six years, public revenues would increase by more than 10 billion Euro per year. In order to model fiscal balance, these additional revenues are redistributed to families through an increase in the child benefit that could be as high as 190 Euro per child per month. This would imply a considerable redistribution from high-income to low-income families and from families with one child to families with two or more children. Moreover, also children of non-married parents would benefit from the increase of the child benefit. The analysis of changes in household welfare has shown that shifting from joint to individual taxation leads to high efficiency gains, as all groups of families face increases in household welfare measured by compensating variation, except for families in the uppermost decile of the income distribution. This reveals the strong distortion that is implied by the high marginal tax rates on secondary earners' wages resulting from joint taxation.

Even if such a radical reform as switching from joint to individual taxation is currently not considered as a plausible reform option, the results of this simulation still contribute empirical findings for the ongoing debate on family policy reform

options. It can be concluded, for example, that intermediate steps such as limiting the maximum amount of the splitting gain for married spouses in the form of a "real income splitting" ("Ehegattenrealsplitting") would not only be a way to finance other family policy measures but would also reduce the existing distortions. On the other hand, all reforms that increase the effect of joint taxation by providing benefits that are means-tested on the household level, such as the newly introduced in-work credit for low income families ("Kinderzuschlag"), enforce the strong distortions induced by joint taxation.

5.3 The Next Step: Estimating a joint model of fertility and labor supply

One shortcoming of the model presented in this dissertation is that fertility is treated as an exogenous variable. This is a critical assumption from a methodological point of view, since it might bias the estimates of labor supply elasticities if there are unobserved characteristics that influence the labor supply and the fertility decision at the same time. Apart from this, it is also a restriction as far as policy evaluation is concerned, since many family policy reforms are motivated by the aim to increase fertility rates. In particular, policy makers would be interested to know whether and to what extent fertility decisions can be influenced by monetary incentives.

A natural extension of the model developed in this dissertation would be to treat mothers' labor supply, the demand for childcare and fertility as a joint decision. Previous studies, for example by Blau and Robins (1989) for the US and by Del Boca (2002) for Italy, have estimated reduced form models to analyze the effect of child care costs on mothers' labor force participation and fertility decisions. Both studies find that childcare costs negatively influence the probability of women to be engaged in market work as well as the probability to give birth to a child. The disadvantage of these reduced form models is, however, that the budget restriction is not considered

explicitly. The policy implications of these estimation results is therefore limited.

Laroque and Salanie (2005) use a different approach and estimate a structural model to analyze labor supply and fertility choices for France. The key variable in the utility function is net household income that is computed for different choice categories using a detailed tax-benefit model. Thus, their model is suitable for policy simulations and the analysis of potential effects on labor supply and fertility. They find that changes in wages as well as changes in non-labor income, such as child benefits, significantly affect fertility decisions. For example, they show that the recent French reform of the parental leave benefit significantly increased the number of births.

The above mentioned studies model labor supply and fertility choices within a static framework. Yet, as soon as fertility decisions are to be included as an endogenous variable, this specification does not seem to be adequate. Instead, it is more realistic to assume that as far as fertility decisions are concerned, past decisions and future expectations play a crucial role, necessitating a dynamic framework. Several empirical studies on dynamic models of fertility and work decisions already exist for the US (see, for example, Hotz and Miller (1988) and Keane and Wolpin (2002a, 2002b)). In a study for Italy, Spain and France, Del Boca and Sauer (2006) estimate a dynamic bivariate probit model of labor force participation and fertility choices. In their model, key determinants of the behavioral model are husbands' and wives' earnings. They perform separate estimations for the three countries in a first step. Afterwards, they present a simulation exercise that consists of predicting labor force and fertility outcomes of all women for all countries in order to obtain estimates of the importance of the institutional environment such as childcare availability and part-time employment possibilities. Predicting labor force and fertility outcomes for Italian women using the coefficients from the French estimation, they find that the labor force participation rate would increase by 17.5 percentage points and fertility by 0.3 percentage points in Italy. Implicitly, the authors assume in this simulation

exercise that the differences in the estimated parameters can solely be attributed to institutional differences.

As far as the dynamic estimation is concerned, Francesconi (2002) goes one step further and estimates a fully dynamic model of fertility and labor supply with endogenously accumulated work experience for married couples in the US. In his model, current decisions depend on past behavior and future expectations. He estimates parameters of a structural model using panel data for married couples who have been observed during their whole fertile life period (16 years). The budget constraint of the families in this study is approximated by earnings of husband and wife under non-participation, part-time and full-time work. The tax-transfer system, however, is not explicitly modeled. Thus, the model can be used to simulate changes in the wage-experience profile on labor supply and fertility, yet the possibilities for more explicit policy simulations such as child-related benefits or child care subsidies are limited.

If policy relevant questions such as whether increasing child related benefits or childcare subsidies can influence fertility decisions shall be analyzed, the detailed depiction of the incentive structure is an important prerequisite. As has been shown in this dissertation, work incentives are not only shaped by the tax-transfer system but also by costs and accessibility of childcare. Building up and estimating a dynamic structural model of fertility and labor supply for Germany, including a detailed modeling of the budget constraint for the German case, is left for future research.