This study was prompted by the fact that the negative correlation between the labour supply of women and their fertility has been so variously interpreted by a number of earlier investigators. Research into labour supply is generally founded on the premiss of a unilateral causal relation linking fertility with labour supply. Research into fertility, too, is generally founded on the premiss of a unilateral causal relation, but here it runs from labour supply to fertility. In the present study, labour supply and fertility are brought into relation one with the other within a single theoretical framework, namely neo-classical micro-economics. The choice of subject is also a reflection of the thought that the relationship between labour supply and fertility is crucial to the emancipation of men and women.

It is the author's intention that this study will stimulate analysis (both economic and otherwise) of labour supply and fertility and thereby help the Netherlands to make up some of the lost ground in comparison with the Anglo-Saxon countries. The possibilities of this kind of research in our country have recently been considerably enlarged by the improvement in the availability of the necessary data, and also because the country has recently witnessed the emergence of a variety of problems into public attention which are clearly not susceptible of a purely macro-economic approach. The problems concerned relate in particular to the effects of taxation and the levying of social security premiums, the payment of social security...
benefits and such measures as a general shortening of the working week on the labour supply and hence on the distribution of income between individuals and households. Not unconnected with this, the effects of such factors as the labour supply and family income patterns on numbers of children and their timing, and hence again on the labour supply, are also important. For a proper insight into these relationships it is important to be able to call upon micro-economic policy models relating to the labour supply and fertility behaviour of individuals and households. One of the purposes of the present study is to contribute to the construction of such models.

The study consists of three parts. The first two chart developments in economic analysis of individual labour supply and that of fertility respectively. This is intended in the first place to lay the foundations for an adequate theoretical and empirical analysis in the areas concerned. In the second place the intention is to obtain more insight into the way in which the development of theories takes place within the neo-classical research programme. The third and final part reports on the results of three empirical analyses carried out on data obtained in the Netherlands.

2. The development of the economic theory of individual labour supply

It is undeniable that there is a certain impressionistic air to the studies of individual labour supply that appeared in the period preceding the rise of the neo-classical theory. This, when it came, brought with it the creation of a theoretical framework with which we now find that some aspects of individual labour supply can be tackled on a systematic basis.

The embedding of the theory of individual labour supply in the neo-classical research programme has had a number of important consequences. In the first place labour supply is part of a system of developments within the neo-clas-
shortening of the working week and the distribution of income between the family members. Accompanied with this, the effects of family income patterns on the work incentive and hence again on the labour supply and hence again on the labour market. This in turn makes it possible to call upon micro-economic models to explain the interaction and fertility behaviour of the various purposes of the present study on such models.

First two chart developments in the field of individual labour supply and that of fertility theory. The former is the first place to lay the conceptual and empirical analysis in the second place to the development of theories takes place in the form of models. The third and final part of the analyses carried out on data concerning only the labour supply and fertility will be the theories take place in the form of models.

In general, developments within the theory of individual labour supply and fertility theory. In economic theory it is generally accepted that there is a positive correlation between income and fertility, since it is regarded as hardly likely that children constitute an inferior good. In much empirical research, however, such a correlation appears to be absent. Indeed, a negative correlation is often found. The development of the economic theory of fertility can to a large extent be regarded as an attempt to incorporate into the present mathematically oriented labour supply models aspects of labour supply that had been lost from sight after Marshall.

In the first place it means that individual labour supply is part of a system of interdependences. This in turn makes it possible to study a variety of phenomena, for example labour supply and fertility, within a single theoretical framework. The second consequence has been that the development of the theory of individual labour supply has been strongly influenced and furthered by developments within the neo-classical research programme. A third consequence is that, given the fact that the neo-classical theory has in practice proved to be a stimulus to empirical research, empirical research into individual supply has also been given greater impetus.

3. The development of the economic theory of fertility

Far and away the largest component of the economic theory of fertility is also a constituent of the new home economics. The application of
the new home economics produces a framework for theoretical analysis from which it is possible, with the aid of some auxiliary assumptions, to derive special models with which to approach specific problems. In this way it becomes possible to study different problems, including those relating to labour supply and fertility, in a single theoretical framework.

In contrast to what has been claimed by some authors, simultaneous analyses of labour supply and fertility need not necessarily fall outside the scope of the neo-classical approach. A survey of 26 such analyses shows that the effect of fertility on the labour supply of women is more often significant than the effect of the labour supply of women on fertility. In seven studies situations have been reported in which the two phenomena significantly affect each other; in ten, neither of the two effects was found to be significant.

4. Labour supply and fertility in the Netherlands: some empirical analyses

On the basis of data obtained in the housing needs survey (Woningbehoefteonderzoek) of 1981 and processed by the Office of Social and Cultural Planning (Sociaal en Cultureel Planbureau), an investigation was conducted into the labour supply of women in the Netherlands. An empirical analysis of labour force participation of married women and unmarried women living in an enduring relationship with a male partner, and of the married women in this sample separately, shows that the variables included in the analysis have the effects that would be expected on theoretical grounds. The elasticities with respect to other household income (i.e., household income excluding the woman's labour income) and these women's own wage rate are -0.3 and 1.7 respectively. The presence of children affects the woman's labour force participation negatively. This negative effect is stronger as the children are young. Children turns out to be significant present. The age of the region of which the participation in a negative effect of time produces an elasticity with -0.2 and a (just not significant) be deduced that the theoretical elasticity should be greater. Observations apply to the effect that were in the discussion on participation.

The results for unmarried women on a permanent basis support the view that they behave more independently than their husbands, in so far as other expenses are exclusively of the man's income, the labour supply. The wage rate of participation is 0.6; the wage rate of the working time of those participating.

The difference in labour force participation of unmarried women living together accounted for by differences in working time these percentages are respectively.

Following on from the above analyses of the effect of a general
framework for theoretical analysis, with the aid of some auxiliary assumptions, allow us to approach specific problems. In this way, we can study different problems, including fertility, in a single theoretical framework.

Simultaneous fertility need not necessarily fall into the framework, as studies situations have been reported to be significant. In the Netherlands, for example, the housing needs survey (Woningbe-urog), an investigation of the labour supply of women in the Netherlands. An analysis of these findings shows that the effects that are significant and to be significant.

In the Netherlands: some empirical observations apply to the effect of the presence of children as those that were in the discussion of the explanation of labour force participation.

The results for unmarried women living with a male partner on a permanent basis support the hypothesis that in economic terms they behave more independently than married women living with their husbands, in so far as other household income, consisting almost exclusively of the man's income, has no significant effect on their labour supply. The wage rate elasticity of their labour force participation is 0.6; the wage rate elasticity of the weekly paid working time of those participating on the labour market is not significant.

The difference in labour force participation between married women and unmarried women 'living together' proves to be approximately 85% accounted for by differences in the features of the two categories and 15% by behavioural differences. When it comes to the weekly paid working time these percentages are approximately 70% and 30% respectively.

Following on from the above analyses an investigation was undertaken of the effect of a general shortening of the working week on the
labour supply of women in the two previously mentioned categories. It must be emphasized here that this was a partial analysis and that, for example, circular flow effects were disregarded. Assuming that a general shortening of the working week by 10%, with a proportional loss of income for all persons in receipt of a wage or salary for a working week of 40 hours or more, would provide 425000 extra jobs, the resultant additional labour supply can be estimated at approximately 138000 women, corresponding to approximately 77000 work years. The extra labour supply from married women and unmarried women 'living together' is wholly accounted for by the married women among them. These results support the conclusion drawn from earlier research, namely that the specific effect of a general shortening of the working week, i.e. the effect that results from the fall in the partner's income, appears to be something between relatively slight and nil. The effect found, merely reflects the fact that there seems to be a substantial degree of hidden unemployment among the women concerned.

An investigation was then carried out into how far the difference between the average net wage rate used hitherto and the theoretically more appropriate marginal net wage rate leads to different results. When the endogeneity problem that occur in the estimation of labour supply functions are tackled with the help of linearized budget restrictions by means of the method of instrumental variables, the results are very little different from those obtained with the average net wage rate.

On the basis of the data obtained from the labour market survey (Arbeidsmarktonderzoek) of 1982 the Willis fertility model was tested. The results obtained support that model. The effect of a woman's level of education is negative where the male partner's educational level is low but rises as the partner's educational level rises and gradually becomes positive. An analogous conclusion is obtained for the effect of the male partner's level of education when the woman's wage as the explanatory variables. A question of generation factors only play a part when they want more that two children. Willis's model appears only to the of whether, once people already. It should be borne in mind when analysis relates to generations.

On the basis of the 1971 census economic-demographic ten-equation cross-section analysis was carried for participation of women, fertility analyses all support the hypothesis women and fertility affect each other. The findings of analyses based on observations. In one of the participation of women, their fertility proves to be relatively sensitive to the woman's labour force participation.

5. Concluding discussion

A micro-economic analysis of labour at least two respects. In the effects. Thus in the research pr the general shortening of the working men and women living together basis, circular flow effects have
iously mentioned categories. It is a partial analysis and that, for disregarded. Assuming that a week by 10%, with a proportional lift of a wage or salary for a could provide 425000 extra jobs, the can be estimated at approximately approximately 77000 work years. The women and unmarried women 'living by the married women among them. drawn from earlier research, general shortening of the working week in the partner's been relatively slight and nil. The that there seems to be a roent among the women concerned.

into how far the difference hitherto and the theoretically one leads to different results. occur in the estimation of labour the help of linearized budget and of instrumental variables, the those obtained with the average from the labour market survey Willis fertility model was tested. 11. The effect of a woman's level the partner's educational level is sional level rises and graduallyusion is obtained for the effect of the male partner's level of education. Analogous conclusions also supply when the woman's wage rate and the partner's income are taken as the explanatory variables. A further analysis shows that there is no question of generation effects. Leibenstein's thesis that economic factors only play a part when the question arises of whether people want more that two children is supported by the results found. Willis's model appears only to offer an explanation for the question of whether, once people already have two children, they have a third. It should be borne in mind when considering these results that the analysis relates to generations of women born in 1942 or earlier.

On the basis of the 1971 census and within the framework of an economic-demographic ten-equation model a simultaneous, regional cross-section analysis was carried out to explain labour force participation of women, fertility, and child quality. The various analyses all support the hypothesis that labour force participation of women and fertility affect each other, which is in line with the findings of analyses based on data relating to individual observations. In one of the variants conducted, the labour force participation of women, their fertility and child quality all effect one another negatively. However, the effects of and on child quality prove to be relatively sensitive to the precise operationalization of the woman's labour force participation and fertility.

5. Concluding discussion

A micro-economic analysis of labour supply and fertility is partial in at least two respects. In the first place it abstracts from macro-effects. Thus in the research presented here into the effects of a general shortening of the working week on the labour supply of married women and women living together with a male partner on a permanent basis, circular flow effects have been disregarded. It would be a good
idea to merge the micro and macro analyses by using the results of the one in the other and vice versa. In the second place the analysis is monodisciplinary. The basic premiss of this study was that it is worth while to examine what micro-economics can do in the area of labour supply and fertility. When it is realized that the empirical analyses presented here are only first steps towards the construction of micro-economic policy models, it would seem justifiable to conclude that prospects are encouraging. This does not detract from the fact that the value of these models can be increased by incorporating sociological and demographic insights. These might include, for example, the effect of reference groups on labour supply and fertility. As far as fertility is concerned, the choice for the first two children, in particular, appears to lend itself more to a sociological and demographic analysis.

The study concludes with a list of some subjects requiring further investigation.

**Literatuur**


