

University of Groningen

## Arbeidsaanbod en kindertal. Een micro-economische analyse

Siegers, Jacobus Johannes

**IMPORTANT NOTE:** You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

1985

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Siegers, J. J. (1985). Arbeidsaanbod en kindertal. Een micro-economische analyse. Groningen: s.n.

**Copyright**

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

**Take-down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

SUMMARY

LABOUR SUPPLY AND FERTILITY. A MICRO-ECONOMIC ANALYSIS

1. Introduction

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 the labour supply is part of a system of variables, and it is possible to study a variety of relationships between labour supply and fertility, within a single framework. One of the consequences has been that the development of the labour supply has been seen in the context of developments within the neo-classical research programme. The consequence is that, given the theoretical framework, in practice proved to be a stimulus to further research into individual supply.

In general, developments within the neo-classical research programme appeared to be characterized by a high degree of plausibility. To some extent this has led to an attempt to incorporate into the neo-classical supply models aspects of labour supply theory developed after Marshall.

## 3. The development of the economic theory of fertility

In economic theory it is generally assumed that there is a positive correlation between income and fertility. It is regarded as hardly likely that a negative correlation is present. In much empirical research, however, a negative correlation is absent. Indeed, a negative correlation has been found. One of the reasons of the economic theory of fertility is that it is seen as an attempt to construct models within the neo-classical research programme which are in line with empirical findings.

Far and away the largest component of the neo-classical research programme is also a constituent of the

shortening of the working week  
distribution of income between  
ected with this, the effects of  
family income patterns on  
and hence again on the labour  
proper insight into these  
ble to call upon micro-economic  
ply and fertility behaviour of  
e purposes of the present study  
such models.

First two chart developments in  
ar supply and that of fertility  
the first place to lay the  
and empirical analysis in the  
e intention is to obtain more  
opment of theories takes place  
amme. The third and final part  
al analyses carried out on data

### Supply of individual labour supply

an impressionistic air to the  
that appeared in the period  
theory. This, when it came,  
retical framework with which we  
l labour supply can be tackled  
al labour supply in the neo-  
had a number of important

consequences. 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.

In general, developments within the theory of individual labour supply appeared to be characterized by a desire to increase its own plausibility. To some extent this desire can be interpreted 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.

### 3. The development of the economic theory of fertility

In economic theory it is generally accepted that there is a positive correlation between income and the number of births, 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 construct models that not only fit into the neo-classical research programme but are also compatible with these empirical findings.

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 at young children turns out to be children present. The age of the in the region in which she participation in a negative sense 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 participation.

The results for unmarried women permanent basis support the behave more independently than husbands, in so far as other exclusively of the man's income labour supply. The wage rate participation is 0.6; the wage working time of those participants significant.

The difference in labour force participation unmarried women 'living together' accounted for by differences in 15% by behavioural differences working time these percentages respectively.

Following on from the above analysis of the effect of a general

framework for theoretical analysis  
 aid of some auxiliary assumptions,  
 to approach specific problems. In  
 study different problems, including  
 fertility, in a single theoretical

ed by some authors, simultaneous  
 fertility need not necessarily fall  
 ical approach. A survey of 26 such  
 of fertility on the labour supply of  
 an the effect of the labour supply  
 studies situations have been reported  
 cantly affect each other; in ten,  
 nd to be significant.

the Netherlands: some empirical

the housing needs survey (Woningbe-  
 rocessed by the Office of Social and  
 ureel Planbureau), an investigation  
 pply of women in the Netherlands. An  
 participation of married women and  
 enduring relationship with a male  
 in this sample separately, shows  
 the analysis have the effects that  
 l grounds. The elasticities with  
 me (i.e., household income excluding  
 se women's own wage rate are -0.3  
 ence of children affects the woman's  
 tively. This negative effect is

stronger as the children at home are younger. The effect of having  
 young children turns out to be smaller if there are also older  
 children present. The age of the woman and the level of unemployment  
 in the region in which she lives both affect her labour force  
 participation in a negative sense. An analysis of weekly paid working  
 time produces an elasticity with respect to other household income of  
 -0.2 and a (just not significant) wage rate elasticity of 0.25. It can  
 be deduced that the theoretical requirement that the substitution  
 elasticity should be greater than zero has been fulfilled. The same  
 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 supply when the woman's wage as the explanatory variables. A no question of generation effects factors only play a part when t want more than two children Willis's model appears only to 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 out participation of women, fertility analyses all support the hypothesis women and fertility affect each other findings of analyses based on observations. In one of the participation of women, their fertility one another negatively. However, prove 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 on general shortening of the working women and women living together on basis, circular flow effects have

viously mentioned categories. It is a partial analysis and that, for example, the effect of the partner's education is disregarded. Assuming that a 10% increase in the working week by 10%, with a proportional increase in the receipt of a wage or salary for a week, would provide 425000 extra jobs, the effect can be estimated at approximately 77000 work years. The effect on married and unmarried women 'living together' is estimated to be smaller than that by the married women among them. This is drawn from earlier research, which shows a general shortening of the working week from the fall in the partner's income, which is relatively slight and nil. The effect is that there seems to be a general shortening of the working week among the women concerned.

It is interesting to see how far the difference between the results obtained hitherto and the theoretically expected results leads to different results. This is especially so in the estimation of labour force participation. In the help of linearized budget constraints and the use of instrumental variables, the results are those obtained with the average

from the labour market survey. The effect of the partner's educational level is estimated to be smaller than that of the woman's educational level rises and gradually disappears. A conclusion is obtained for the effect

of the male partner's level of education. Analogous conclusions also apply 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 than 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 affect 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

Abbott, M. en O. Ashenfelter, I  
allocation of time, Review o  
Abbott, M. en O. Ashenfelter, I  
allocation of time: correcti  
1979.  
Ahlburg, D.A., An economic de  
births, marriage, divorce an  
Onderzoekrapport, University  
Allen, R.G.D., Mathematical ana  
Allingham, M.G., Progression an  
juni 1972.  
Allingham, M.G., Progression, l  
Public Finance, 1977.  
Alonji, J.G., The interemporal s  
fluctuations: an empirical  
Special issue, 1982.  
Andorka, R., Determinants of fe  
1978.  
Ashenfelter, O., Some statist  
dependent variables, in: W.G.  
of labor force participation,  
Ashenfelter, O., Comment, Journ  
Part 2.  
Ashenfelter, O., Unemployment  
behaviour, in: M.J. Artis  
economic analysis, Londen, 19  
Ashenfelter, O., Comment, in: C.  
(red.), Women in the labor ma  
Ashenfelter, O. en J. Heckma  
substitution effects in a mod