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Female Labour Market Behaviour and Fertility

A Rational-Choice Approach

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CHILDREN AND FEMALE LABOUR SUPPLY: A SURVEY OF ECONOMETRIC APPROACHES[1]

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12.1. Introduction

The way in which economists try to learn about economic responses, such as the effects of children on female labour supply, can be broken down into three steps:

1. the consideration of information already available called *a priori* information, including inferences based on what economists believe they know about other aspects of economic behaviour, and the formulation of qualitative, nonparametric behavioural concepts and hypotheses that are usually stated in words;
2. the specification of mathematical models that are consistent with the *a priori* information and which provide parametric representations of the behavioural hypotheses of interest;
3. the use of available data and statistical methods to estimate, and then to test and interpret, the parameters of the specified mathematical models.

Steps 1 and 2 are sometimes viewed as the purview of *mathematical economics*, while step 3 is seen as the domain of *econometrics*. Most textbooks on econometrics deal with the problems of estimating, testing and interpreting the parameters of given, mathematically specified models.

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The formulation of mathematical models of female labour supply is the topic of a companion paper (chapter 11). The present paper focusses on the estimation of the parameters of models of female labour supply, and, in particular, on the estimation of child-related effects on female labour supply.

The basic behavioural concepts underlying most economic models of female labour supply are summarized in section 2. Also a distinction is drawn between direct and indirect child-related effects on female labour supply. In section 3 the key equations of a static, one-period model of female labour supply are summarized.

One of the insights which emerges from sections 2 and 3 is that the nature of indirect child-related effects on female labour supply depends critically on how the labour supply decisions of women are affected by the wage offers they receive from employers. There is a large body of empirical literature on measuring these wage effects. This literature and related econometric issues are selectively discussed in section 4. Problems concerning the estimation of direct child status effects are the subject of section 5. Conclusions are summarized in section 6.

12.2. Basic behavioural concepts

In most economic models of female labour supply, each woman is viewed as having both an offered wage and a reservation wage. The *offered wage* is defined as what an employer would be willing to pay for an (or another) hour of the woman's time. The *reservation wage* is defined as the amount of money the woman would require to be willing to work one (or one more) hour. Usually it is thought that the more hours a woman works, the more she will value her remaining nonwork hours. Thus the reservation wage is assumed to be an increasing function of hours of market work.

The *decision rules* implied by commonly used models of female labour supply are: (1) a woman will choose to work if her offered wage exceeds her reservation wage evaluated at zero hours of work, and (2) a woman who works will choose her hours of work so as to equate her reservation wage (evaluated at her actual hours of work) with her offered wage. The implication of the second decision rule for actual behaviour is presumably that working women will look for job situations that allow them to come as close as possible to supplying the amounts of labour that would equate their offered and reservation wage rates. This analytical framework focusses attention on factors that are expected to affect women's offered and reservation wage rates.

The *direct effects* of the time, effort and expense of having and caring for children are usually viewed as affecting a woman's labour supply behaviour via her reservation wage function. The coefficients of child status variables in the equations for the probability of work and for the hours of work are hypothesized to reflect these direct effects. As stated in the Introduction, the problems of estimating the direct effects of children on female labour supply are examined in section 5.

The child bearing and rearing roles of women are also hypothesized to have *indirect effects* on female labour supply via human capital investment effects on women's offered wage rates. Women who have children and who work less during their active child bearing and rearing years will accumulate less on-the-job experience because of their reduced labour supply. Another way in which children are thought to reduce the job-related human capital that women accumulate involves anticipatory behaviour on the part of employers, women's families, and women themselves. The returns to job-related training are realized through working. If most women work less than most men over their lifetimes (presumably because most women have children), then employers and others (including women themselves) may be less willing to make training investments in women because the expected returns are lower than for equally capable men. Economic theory implies a positive relationship between the offered wage rates of individuals and their stocks of job-related human capital.

Suppose that children have negative effects on women's offered wage rates via the effects of children on job-related human capital accumulation. The sign of the resulting *offered wage effects* on female labour supply will determine whether the *indirect child status effects* on female labour supply are positive or negative. This is the motivation for selectively reviewing in section 4 reported estimation results for the responses of the hours of work of married women to changes in their offered wage rates.

12.3. Basic econometric choices

All of the econometric issues to be considered in this section can be discussed within the framework of the static, one-period model. Models of this sort have provided the analytical basis for a large body of applied research on female labour supply. See, for example, Heckman (1974b, 1976a, 1980); Nakamura *et al.* (1979); Nakamura and Nakamura (1981, 1983); and the long list of studies given in Killingsworth (1983, table 4.3, pp. 193-199). This model also forms a helpful point of departure for considering a number of the issues dealt with in later sections of this paper.

The static, one-period model and various extensions of it are discussed more fully in the previous chapter. For convenience, we restate the key equations of the model.

Let H denote a woman's hours of work in a given time period. Her offered wage is denoted by w, and her reservation wage evaluated at her actual hours of work is denoted by $w^*(H)$. Let Z be a vector of personal characteristics affecting productivity in paid work, such as years of schooling, and of variables which characterize labour market conditions, such as the unemployment rate; let Z^* be a vector of predetermined variables affecting the value a woman places on her off-the-job (or nonmarket) time, such as how many children she has; and let Y stand for household income in the given time period excluding the earnings of the woman herself.

Suppose that a woman's *reservation wage* obeys the relationship

$$\ln w^*(H) = \begin{cases} \beta_0 + Z^*\beta_1 + \beta_3 \ln w + \beta_4 H + u^* & \text{if } H > 0 \\ \beta_0 + Z^*\beta_1 + \beta_2 Y + u^* & \text{if } H = 0, \end{cases} \tag{1}$$

and that her *offered wage* is given by

$$\ln w = \alpha_0 + Z\alpha_1 + u. \tag{2}$$

Then the probability the woman will work in the specified time period is given by

$$P(H > 0) = P[\ln w > \ln w^*(0)] = F(\phi), \tag{3}$$

where F denotes a cumulative density function for $(u^* - u)$,

$$\phi = (1/\sigma)[(\alpha_0 - \beta_0) + Z\alpha_1 + Z^*\beta_1 - \beta_2 Y], \tag{4}$$

and σ is the standard deviation of $(u^* - u)$. If a woman who works chooses her hours of work so as to equate her reservation wage evaluated at her actual hours of work with her offered wage, then her hours of work will be given by

$$H = (1/\beta_4)[(1-\beta_3)\ln w - \beta_0 - Z^*\beta_1 - \beta_2 Y - u^*], \tag{5}$$

In equations (1)-(5), the α's and β's are parameters to be estimated.

12.3.1. Dealing with limited dependent variables

A probability, such as the probability of work in a year, must lie between 0 and 1. Also hours of work must be nonnegative. Thus both the probability of work and hours of work are limited dependent variables. The simplest estimation approaches ignore this aspect of these variables. For example, relationships (3) and (4) for the probability of work can be approximated by a *linear probability model*. A dummy variable set equal to 1 for each woman who works and set equal to 0 otherwise can be regressed on the variables in Z, Z^* and Y. Linear probability models were estimated in many of the earlier micro data studies of female labour supply.

One drawback of the linear probability model is that the predicted values for the probability of work may not fall in the 0-1 interval within which probabilities must lie. A second problem is that the ordinary least squares (OLS) estimates of the standard errors of the coefficient estimates will not be appropriate. Two estimation methods which overcome the first of these problems, and which may yield more appropriate estimated standard errors, are logit and probit analysis. If F in (3) is the standard normal cumulative density function, then *probit analysis* is the estimation method to choose. If F is thought to be the logistic cumulative density function, then *logit analysis* is the proper estimation method.

12.3.2. Sample selection

Available data sources contain no information on many factors believed to affect individual probabilities of work. Moreover some of these factors may also affect women's offered wage rates and hours of work, and may be correlated with some of the included variables in the equations for hours of work and the offered wage. If the hours of work and offered wage equations are estimated using data only for women who work, and without regard for the omitted factors also affecting the selection of who works, the estimated coefficients may be subject to *selection biases*.

There are two econometric approaches to selection bias problems that have been widely used in studies of female labour supply. Both usually presume that F in (3) is the standard normal cumulative density function. The first approach, called *Tobit estimation*, usually involves treating the relationships for the probability of work and the hours equation as an integrated model. This treatment is consistent with the theoretical derivation of the model. In practice, however, the Tobit assumption of an integrated model may be inappropriate because some of the included (or omitted) variables have different types of effects on the decision to work versus the choice of hours of work.

An alternative approach is the two step estimation procedure sometimes called Heckit analysis. In *Heckit analysis*, the parameters of (4) are first estimated using probit analysis. These estimation results are used to compute values for a *selection bias term* defined as

$$\lambda = f(\phi)/F(\phi), \tag{6}$$

where f is the standard normal density function, F is the standard normal cumulative density function, and ϕ denotes the estimated probit index defined in (4). Under certain assumptions, when the Heckit λ is included as an additional regressor in the offered wage and hours equations it will control for selection bias effects, and these equations can be appropriately estimated using only data for women who work. This is important because, in most data sets, wage information is available only for women who work. (For fuller discussion on this topic see Heckman, 1974b, 1976a, 1977, 1980, 1987; and Gronau, 1974. See also Amemiya, 1984; Paarsch, 1984; Nakamura and Nakamura, 1989; and Wales and Woodland, 1980.)

12.3.3. Bias problems associated with specific explanatory variables

The basic cause of coefficient bias problems are correlations between included explanatory variables and omitted factors. Because of these correlations, the coefficient estimates for the included explanatory variables pick up some of the effects of the omitted factors in a proxy sense. Hence these estimated coefficients will not appropriately reflect what the impacts on the dependent variable would be of specified changes in the associated explanatory variables. The selection biases discussed in the previous subsection are due to correlations between explanatory variables in the equation of interest and omitted factors that also affect selection into the group for whom the equation is being estimated.

Another source of correlations that can cause coefficient bias problems are omitted factors which are also determinants of an included explanatory variable in the equation. For example, tastes for a job-oriented versus a home-oriented life style may affect hours of work and may also be determinants of the offered wage variable included in the hours equation via the effects of these tastes on human capital accumulation. (For discussion and references concerning tests for bias problems of this sort see Nakamura and Nakamura, 1981b, 1985c.) There are two approaches which have been commonly adopted for coping with this problem. These approaches can be most easily understood in a specific context.

For example, suppose the wage variable in the hours of work equation (5) is correlated with the equation error term, but that the observable factors in Z (from the offered wage equation) are uncorrelated with the error term for the hours equation. In the one approach, the right-hand side of the offered wage equation (2) is substituted for the wage variable in the hours equation, yielding a *reduced form* hours equation. In the other approach, the parameters of the wage equation are estimated in some appropriate way, and then predicted values for the wage variable are substituted for the actual values in the hours equation. This second approach is called *instrumental variables (IV)* estimation.

12.4. Estimating offered wage effects on female labour supply

Suppose it is true that children tend to reduce the amounts of job-related human capital that women accumulate, and that offered wage rates are an increasing function of job-related human capital. (For discussion and empirical evidence relevant to these assertions, see Corcoran *et al.*, 1983; Cox, 1984; England, 1982, 1984; Jones and Long, 1979; Mincer and Ofek, 1982; Mincer and Polachek, 1974, 1978; Polachek, 1979, 1981; and Sandell and Shapiro, 1978, 1980.) Then *the indirect, offered wage-related effects of children on female* *labour supply will be negative if there is a positive relationship between women's labour supply and their offered wage rates.*

A woman's expected *unconditional labour* supply can be factored into the *probability of work* in a given period (that is, the probability of positive hours of work) times the *expected hours of work conditional on the decision to work*. This suggests that estimates of offered wage effects on the probability of work and on the hours of work for women who work can be obtained from the estimated coefficients of a wage variable in equations for the probability of work and for the hours of work for those who do.

The hours equation (5) contains the offered wage variable ln w.

In the index for the probability of work (4), the right-hand side of the offered wage equation (2) has been substituted for ln w. The reason for this substitution is that offered wage values are not usually available for those who did not work. The variables included in the index for the probability of work need to be ones that can be observed for women who did not work as well as for those who did.

In (4), Z^* is a vector of variables believed to affect women's reservation wage rates, while Z appears because the right-hand side of (2) has been substituted for ln w. If there are variables in Z which are not included in Z^*, then the response of the probability of work to women's offered wage rates might be inferred from the estimated coefficients of these variables. However, it is difficult to think of variables which would affect what employers would be willing to pay women and that would definitely not affect their reservation wage rates. For this and other reasons, efforts to estimate offered wage effects on female labour supply have focussed primarily on the hours equation.

12.4.1. Wage effects on the hours of work for working women

Many authors still seem convinced that the available empirical evidence shows that working women (or, at least, working wives) tend to increase their hours of work in response to increases in their wage rates. For instance, Blau and Ferber write:

> "With respect to the hours decision, empirical evidence indicates that for men ... they do not decrease, or may even increase, the amount of nonmarket time as their wage rate goes up. ... The situation is quite different for women ... empirical studies for the most part find that women's labor supply is strongly positively related to the wage rate." (Blau and Ferber, 1986, p. 95).

Nevertheless, estimates for married women of the impact of a wage change on hours of work that are small and sometimes negative have been obtained in a number of studies based on cross-sectional and panel micro data. Using micro data from the 1971 Census of Canada, Nakamura *et al*. (1979, p. 800) obtain estimates of the wage response of hours of work for married women in the prime working age groups of 20-24, 25-49, and so on through 45-49 that are in the same range as the responses reported by other researchers for prime age men. Of course, Canadian and U.S. wives might differ in their work behaviour because of a variety of country-specific factors. For instance, U.S. couples typically file joint tax returns while Canadian wives who work are taxed as separate individuals just like their husbands. These concerns are addressed and dismissed in Nakamura and Nakamura (1981a). The tax-corrected estimation results reported in that paper are based on micro data from the 1970 U.S. Census and from the 1971 Census of Canada.

Other researchers have suggested that perhaps wives working full-time might exhibit wage responses similar to those of men, but that wives working part-time would exhibit the large positive elasticities that some have argued should be expected for working women. In Nakamura and Nakamura (1983, p. 246), estimates of the wage response for hours of work are presented separately for U.S. and Canadian wives in five different child status categories and in the two hours-of-work categories of part-time (less than 1,400 in the year) and full-time (1,400 hours or more). The estimated elasticities for women working part-time are found to be similar to those for women working full-time.

Killingsworth (1983, pp. 200-201) has suggested still another reason why the results presented in Nakamura *et al*. (1979) and in Nakamura and Nakamura (1981) may be aberrant. He points out that years of work experience are not directly controlled for in these studies, and also that a child status variable is included as a proxy for experience in the log wage equations. These conjectures are explored empirically in Nakamura and Nakamura (1985b, pp. 180-190 and pp. 278-293). The results are in line with those reported in Nakamura *et al*. (1979) and in Nakamura and Nakamura (1981a).

By now, a number of other researchers have also reported offered wage effects on the hours of work of working women that are small in magnitude, and sometimes negative, as for men. Studies reporting results of this sort include Robinson and Tomes (1985), Stelcner and Breslaw (1985), Smith and Stelcner (1988), and Mroz (1987).

On the basis of these results, *we conclude that probably the wage responses of hours of work for married women are modest, as for men*, and possibly negative. This conclusion is further supported by similar estimates from studies based on negative income tax experimental data for men and for women (Killingsworth, 1983, pp. 398-399, table 6.2). This means that, except for impacts of women's child bearing and rearing activities on their wage rates that are relatively large, *the indirect effects of children on the hours of work of working women that are transmitted via impacts on their wage rates are probably not of great importance.*

This does not mean, however, that the indirect, offered wage effects of children on the probability of work are small.

12.4.2. Wage effects on the probability of work

Economic theory implies that when a woman's offered wage rises this will increase the opportunity cost of her nonmarket time and will provide an incentive for her to substitute more hours of work for nonwork time. Also, however, for a working woman a wage increase means (by definition) that she will earn more even without changing her hours of work, and economic theory implies that a higher income will lead her to increase her consumption of desirable "goods" including time off the job. In other words, economic theory implies that for those who work the *positive substitution effects* of a wage change on the hours of work will be counterbalanced to some (theoretically undetermined) extent by *negative income effects*. Even a negative net relationship between women's offered wage rates and the hours of work for those who work cannot be ruled out on theoretical grounds.

With regard to the decision to work (as opposed to the choice of hours of work) there should only be positive substitution effects of a wage change on the decision to work, since a change in the offered wage does not change the earned income of a women who is not working. The lack of a strong positive relationship between the offered wage rates and the hours of work *of working women* cannot be interpreted as evidence against this theoretical implication. (A fuller discussion of substitution and income effects is provided in chapter 11).

12.5. Estimating the direct effects of children on female labour supply

Whether or not children have important indirect effects on female labour supply, available empirical evidence suggests that some of the direct effects of children are negative and possibly large. Consensus concerning the magnitudes of these direct effects of children awaits consensus concerning the proper methodology for estimating them.

12.5.1. Alternative estimates presented by Schultz

Schultz (1978) compares estimates of the labour supply responses to the number of children ever born for several of the estimation methods discussed in section 3. In table 1 we present some of his results in elasticity form, as Schultz presents these results. An elasticity gives the percentage change in the dependent variable in response to a one percent change in the designated explanatory variable. Schultz's *OLS results for all women* (with hours of work at zero for those who did not work) are shown in column 1 in the top panel of table 1. Schultz's *Tobit estimates* of these same labour supply responses are presented in column 2. The Tobit approach, which also uses data for all women, allows for the limited nature of the dependent variable (hours of work cannot be negative), for the fact that wages cannot be observed for those who do not work, and for the possibility of selection bias problems. Compared in terms of their magnitudes, the estimates in columns 1 and 2 are quite similar. Both sets of estimates imply there is a strong negative relationship between the expected labour supply of a woman and the number of children she has. These estimates are consistent with the popular belief that a female employee who has a baby is likely to quit or to drastically reduce her hours of work.

Schultz's estimates shown in column 3 of table 1 are for the same linear hours equation for which estimation results are shown in column 1, except that now the *OLS estimates* of the response parameters are computed using data *for only those women who worked* (that is, for women with positive hours of work). No correction has been made for possible selection bias problems, but it has been established elsewhere that, in this context, allowing for selection bias may not greatly change the estimated child status responses (see Nakamura and Nakamura 1985b, section 4.3.5). The estimated responses shown in column 3 are small in magnitude compared to the results when data for all women are used (columns 1 and 2).

Table 1. Estimates of elasticity of annual labour supply of wives with respect to children ever born

	Annual hours of work			Probability of work
	All wives		Wives who worked	All wives
	OLS	ML Tobit	OLS	Logit
White, 18-24	-.55	-.76	-.10	-.60
White, 25-29	-1.04	-1.12	-.29	-.80
White, 30-34	-.51	-.62	.06	-.49
White, 35-39	-.47	-.51	-.18	-.33
Instrumental variable for children ever born				
White, 18-24	-.24	-.39	.05	-.37
White, 25-49	-.95	-.90	-.14	-.74
White, 30-34	-.92	-1.13	.07	-.95
White, 35-39	-1.13	-1.41	-.27	-1.06

Source: Schultz (1978), p. 299, table 6.

In column 4 of table 1 we show Schultz's logit analysis estimates of the elasticity of female labour supply with respect to the children ever born. A woman's unconditional expected labour supply in a year can be represented as the product of the probability she will work sometime during the year times her expected hours of work if she does work. The elasticity estimates in column 4 only take account of child status effects on the first of these two components into which unconditional expected labour supply can be factored, while the elasticity estimates in column 3 can be thought of as measures of the importance of the second of these components. The elasticity estimates in column 4 for the probability of work are almost as large in magnitude as the estimates in column 1 and in column 2 for the unconditional annual labour supply responses to children born.

A first implication of the results in the top panel of table 1 is that *child-related variations in labour supply primarily manifest themselves in alterations in the propensity to work*. This is not a new observation. In 1969, Bowen and Finegan wrote that "variations in hours worked [for working wives] associated with the presence of children of various ages are so much smaller than the variations in participation that the set of full-time-equivalent rates [for the labour supply of all married women] is dominated by the relationships between the children variables and the adjusted participation rates" (p. 100).

A second implication is that *it may not be appropriate to model the decision to work and the choice of hours of work as aspects of a common underlying behavioural response process*. Schultz (1978, pp. 297-298) observes, "it might be argued that the two choices, first of entering the market labor force and then of determining how many hours to work in the market, arise in different ways, or at least that some variables would receive different weights in the two decisions such as fixed costs of entering the labor force." On the basis of a more recent analysis of alternative models and estimation methods, Mroz (1987, p. 790) also concludes, "the hours of work decisions made when the woman is in the labor force appear quite distinct from her labor force participation decision." (This is not a new finding. See, for example, Lewis, 1967 and Ben Porath, 1973. Despite this, however, the Tobit specification of an integrated model for the decision to work and for hours of work has enjoyed considerable popularity in recent years.) As in the Schultz study, Mroz finds that the Tobit estimates of child-related labour supply responses, obtained using the data for all women, are much larger than the estimates obtained using only data for women who worked.

12.5.2. More on instrumental child status variables

Schultz and others argue that the child bearing behaviour and the labour supply of women are determined by some of the same variables. That is, "fertility may be appropriately viewed in the long run as an endogenous choice variable that is jointly and simultaneously determined by a couple in conjunction with the wife's decision as to how much time she will allocate to the market labor force over her married lifetime (Schultz, 1978, p. 283)". Following Schultz's lead, a number of other researchers have estimated models of female labour supply in which fertility decisions are treated as "endogenous". For instance, in describing his study based on a complex model of female labour supply and fertility, Moffitt (1984b, pp. 263-265) writes that

> "... labour supply and fertility decisions are modelled as completely joint in the same sense as the consumption of two goods is joint. ... The implication of these considerations for econometric estimation

> is primarily that only exogenous variables should be included in the fertility and female labour-supply equations."

If fertility decisions are endogenous in this sense, one implication is that child-status variables contained in Z^* may be correlated with the error term u^* in the hours equation (5). In this case it may be appropriate to deal with the endogeneity of the child status variables by using an *instrumental variables* (IV) estimation method.

An IV method involves replacing the original child status variables appearing in the labour supply equations by estimated linear combinations of "exogenous" variables. Thus the child status variables are split into "explained" and "unexplained" portions, and the unexplained portions of the original child status variables are relegated to the equation disturbance terms. The hope is that the explained portions of the child status variables (the linear combinations of exogenous variables) will be uncorrelated with the omitted, persistent tastes and preconditions affecting both child status and labour supply, and hence will not serve as proxies for these omitted factors.

The elasticity estimates presented in the bottom panel of table 1 correspond, column by column, to those in the top panel, except that they are computed from the coefficient estimates for an instrumental variable for the number of children born. Compared with the elasticity estimates in the top panel, these estimates are consistently less negative for wives younger than 30, but are almost always more negative for wives 30 and older. These differences are small in magnitude when only data for working wives are used (column 3) and tend to be quite large when data for all wives are used (columns 1, 2 and 4). The figures in columns 1, 2 and 4 of the bottom panel suggest, for instance, that a married woman who has been working will be likely to quit if she has a child when she is over 30.

The elasticity estimates in the bottom panel of table 1 might be questioned, however. Even though the motivation for using an instrumental child status variable is clear, it is not clear that the approach solves the underlying correlation (or endogeneity) problem. The difficulty lies with the near impossibility of finding suitable variables to use as instruments for the child status variables. With respect to Schultz's own choice of instrumental variables in his 1978 study, he writes:

> "I will assume here that the wife's residential origins at age 16, her age, and the schooling of both spouses are exogenous determinants

> of fertility, but that these variables exert no direct role in determining the current labor market behavior of the wife. Rural, farm, and Southern origins are frequently stressed in the demographic literature as correlates of U.S. fertility. The wife's age is strongly related to children-ever-born, at least through age 40, and is hardly related to labor force behavior within the narrow age subsamples examined here (18-24, and then 5-year age brackets from ages 25-64). It should be repeated, however, that there is no strong theoretical presumption that these identifying restrictions are in some sense 'correct', but they are proposed only as a starting point." (Schultz, 1978, p. 291)

Unfortunately, it seems conceivable that a woman's residential origins, and her own and her spouse's schooling experiences, could shape her views about both child bearing and the benefits and suitability of mothers working. Hence, an instrumental child status variable based on these residential origins and schooling variables may still pick up both direct effects of children on a woman's labour supply behavior and the effects of taste factors affecting her fertility and also her labour supply. Certainly these "exogenous" variables will not reflect any of the truly chance variation in fertility due to factors like contraceptive failure or multiple births. In fact, it could be that variables like residential origins and years of schooling almost exclusively reflect the variability over women in child status that is due to persistent tastes for home-oriented versus job-oriented activities. Thus the taste-related proxy effects associated with instrumental child status variables could be stronger, rather than weaker as hoped, than the proxy effects associated with child status variables that are directly entered into female labour supply equations.

Moreover, even if suitable exogenous variables could be found to serve as instruments for a single child status variable such as the number of children born, the limited availability of suitable exogenous variables and the limited understanding of the determinants of various aspects of fertility behaviour must surely mean that very few dimensions of a woman's child status can be dealt with using an instrumental variables approach. (For an introduction to some of the aspects of a woman's child status that might be of importance, see, for example, Heckman *et al.*, 1985; Hill and Stafford, 1985b). In Schultz's 1978 study, the only child status variable is a linear term for the number of children ever born. The following passage makes it clear that Schultz recognizes this shortcoming of an instrumental variables approach:

> "But unfortunately, the framework used by economists to interpret differences in fertility (or surviving numbers of children) says little about the factors affecting the timing and spacing of child-bearing. It may not be the number of children a woman has borne, or expects to bear, that directly affects her current labor supply, but rather the current presence of preschool-aged children in the household or the age of the youngest child. ... There is also evidence that the direct association between numbers of children and the wife's labor supply is nonlinear, with the first child having by far the greatest effect." (Schultz, 1978, p. 286).

12.5.3. A fertility control-related instrumental variables approach

In the search for a better set of exogenous variables to use as instruments for child status variables, Rosenzweig and Schultz (1985) take a closer look at the production process for babies:

> "Unlike the consumption by households of television sets or food, the level of fertility is determined by the allocation of resources to limit the biologically determined production of birth-fertility supply. Given that such control is costly and imperfect, and the biological capacity to bear children (fecundity) is stochastic and mostly unaffected by choice behavior, the number of children born to a couple (society) may not exactly correspond to either the couple's (societal) expectations of or preferences for (given costless control) its family (population) size. Moreover, an individual couple may learn about its own specific supply constraints over time ..." (Rosenzweig and Schultz, 1985, p. 992).

The actual number of births to a couple in a given time period is modelled as a sum of a time invariant, couple-specific fecundity factor; a random component; an age factor; and fertility control measures.

The *fecundity factor* is found to be associated with persistent differences in labour supply. Rosenzweig and Schultz write:

> "The estimates indicate that among couples whose fecundity is one standard deviation above the population mean, the proportion of months between 1973 and 1975 in which the wife participated in the labor market was reduced by 16 percent. As was evident for fertility and contraception, moreover, the effects of fecundity variation appear to increase over the life cycle-among the highly fecund couples, the probability that the wife participated in the labor market was 12 percent lower in 1973 and was 17 percent lower in 1975." (Rosenzweig and Schultz, 1985, pp. 1009-1010).

In contrast to these persistent fecundity effects, Rosenzweig and Schultz find that unexpected births (that is, the *random component* of fertility) affect the timing of a woman's labour supply but have little or no effect on the amount of labour a woman supplies over her lifetime. Rosenzweig and Schultz report:

> "With respect to quantitative effects, the associations between actual fertility in the 1970-72 period and the wife's participation in 1973 and 1975 overstate both the immediate (1973) negative and longer-term labor supply responses to an unanticipated birth. The wife's probability of labor force participation is reduced at the sample means by 40 percent in 1973, and by 28 percent in 1975, in response to an actual birth between 1970-72. The arrival of an *unanticipated* birth in the same 30-month period (less 9 months for the pregnancy) ... would reduce the wife's likelihood of participation by only 18 percent in the following year (1973), and *increases* the participation probability by 14 percent in 1975." (Rosenzweig and Schultz, 1985, p. 1011).

For a better understanding of the Rosenzweig-Schultz results, it is important to take a closer look at their estimation methodology. They estimate a *reproduction technology function*, with a measure of actual fertility as the dependent variable. The explanatory variables are several variables for the type and amount of birth control used, births before 1970, coital frequency, whether the woman smoked, and the woman's age and age squared. However, all of these variables are treated as endogenous (and hence potentially correlated with the equation error term) except age and age squared. Taking an 4 approach, estimated linear combinations of variables that are asserted to be exogenous are substituted for the explanatory variables other than age and age squared. The so-called *exogenous variables* are personal characteristics including age, education, religious background and the husband's income, as well as a number of area-specific characteristics such as city size and the per-capita number of obstetrician-gynecologists. The difference between the actual birth rate of couple j in period i (n_{ij}) and the predicted birth rate based on the estimated reproduction technology function (n^e_{ij}) is assumed to be the sum of the couple-specific fecundity factor and the random component. In particular, the *fecundity factor* for each couple is computed as

$$\mu_j = \sum_{i=1}^{t} (n_{ij} - n^e_{ij})/t$$

where t is the number of time periods, and the *random component* for each couple in each time period is given by

$$\varepsilon_{ij} = n_{ij} - n^{e}_{ij} - \mu_j .$$

Notice first of all that the predicted birth rate variable, n^{e}_{ij}, obtained from the reproduction technology function is similar (though more sophisticated) in its makeup to the instrumental child status variable in Schultz's 1978 study (see the discussion of this study in the previous subsection). In Schultz's 1978 study the instrumental child status variable is a function of variables such as the wife's age, education, and place of origin. In the Rosenzweig-Schultz study, the predicted birth rate is modelled as a function of the wife's age and a number of other variables for factors such as contraceptive choice and usage; but the factors other than age are in turn represented as functions of background factors for each woman, including her age and education. In Schultz's 1978 study he views the instrumental child status variable as *independent* of tastes and preferences which might also affect work behaviour, while in the Rosenzweig-Schultz study it is argued that n^{e}_{ij} *captures* these same tastes and preferences. As should be clear from our concluding remarks in the previous subsection, we find the line of argument in the Rosenzweig-Schultz study more persuasive.

A second point is that the couple-specific fecundity factor and the random component are determined as the residual difference between the actual and the predicted birth rate. Hence any persistent taste or learning effects on the actual birth rate of a couple that are not captured by the predicted birth rate will end up as part of the fecundity factor or the random component. For example, previous work experience is not controlled for in the values of n^{e}_{ij}. Starting to work may reduce a woman's desired family size and lead to greater use of birth control. But this will not necessarily be captured by the instrumental fertility control variables which do not depend on past work experience, and hence this effect may show up as a lower value for the fecundity factor or for the random component.

12.5.4. An experimental approach

Rosenzweig and Wolpin (1980) suggest another innovative approach to the problem of obtaining measures of child status impacts on female labour supply that are not confounded with the effects of general tastes and preconditions. Rosenzweig and Wolpin claim:

> "In particular, we show how a natural event, the occurrence of a multiple birth or 'twins', can be used as an instrument for exogenous fertility movements. The variable we propose, a twins outcome in the first birth, approximates the social experiment we wish to perform not only in that some families receive an unanticipated child, while others do not, but also in that the treatment and control groups are randomly selected with respect to characteristics that may be related to market participation. It is therefore unnecessary to utilize any information on the determinants of labor supply behavior in order to determine the 'true' exogenous fertility effect by this method." (Rosenzweig and Wolpin, 1980, pp. 335-336).

They go on to explain:

> "To see why the occurrence of twins in the first pregnancy, 'twins first', leads to the appropriate experiment, consider, instead, a comparison of women who have had twins in any birth and women who have not. ... It is obvious that women with more births - and thus women with, on average, greater desired fertility - will be over-represented in the sample of twins families. The labor supply of women with twins will therefore reflect in part any relationship between unobserved tastes for children and/or tastes for home time. ... Moreover, the per pregnancy probability of twins appears to rise with parity. ... The first birth has the desirable feature that the population of women who experience twins in that birth would prefer the same completed family size as women who do not experience twins in the first birth ..." (Rosenzweig and Wolpin, 1980, p. 336).

Rosenzweig and Wolpin find that an "extra" child on the first birth (before age 35) reduces the mother's current probability of labour force participation by 35 percentage points for women 15-24 years of age, and by about 10 percentage points for women 25-34 years of age.

In the Rosenzweig-Wolpin study, data are pooled from two national random surveys of women: a 1965 survey conducted by the Office of Population Research and a 1973 survey carried out by the U.S. Department of Health, Education and Welfare. Of 15,000 available observations for women 15-44 years of age, 12,605 are used. The main reason for excluding observations is childlessness. The twins-first methodology requires a data sample for women who have had at least one birth. The necessity of excluding childless women is a drawback of the methodology. There may be a fairly strong association between having even one child and a preference for a home-oriented rather than a career-orientated life style.

Of the 12,605 observations, 87 were for women whose first children were twins. The rarity of multiple births is another drawback of the twins-first methodology.

A third difficulty from the perspective of this paper is the Rosenzweig-Wolpin focus on "exogenous fertility movements". The labour supply responses of women to planned children - which is what most children are - may be quite different from their responses to accidental extra children - which is what an "extra" twin is. There may also be scale or threshold effects associated with the care of babies.

We have reluctantly come to the conclusion that, despite its experimental appeal, the Rosenzweig-Wolpin twins-first approach is not a practical methodology for estimating child-related effects on female labour supply. However, a careful consideration of this study has greatly enhanced our own understanding of the basic purposes of and problems with estimating these effects.

12.5.5. Unobservable fixed effects

Bias problems in estimating the coefficients of child status variables in labour supply equations result from correlations between unmeasured tastes and preconditions affecting both labour supply and child status. As already noted, the IV solution to bias problems involves partitioning the child status variables into "explained" and "unexplained" portions, and moving the unexplained portions to the error terms of the reformulated labour supply equations. An alternative approach is to attempt instead to remove the offending unobservables from the error terms of the original labour supply equations.

Heckman and MaCurdy (1980, 1982) present a life cycle model of female labour supply in which intertemporal factors affect current labour supply only through an individual-specific term which is the Lagrange multiplier associated with the lifetime budget constraint. Under certain assumptions, this individual-specific term can be treated as fixed over time for each individual. If an estimation method is used which effectively accounts for or eliminates this individual fixed effects term, two important implications follow for the coefficient estimates of the child status variables in a model of current labour supply. First, the coefficients of the child status variables can be interpreted as reflecting only the current direct impacts of children on a woman's labour supply. Second, one might hope that persistent, individual-specific factors, that may be correlated with child status, like tastes for a home-oriented life style, will be accounted for, and hence will not result in biased estimates of the current period, direct child status effects due to spurious correlations.

12.5.6. Unobservable effects which are persistent but not fixed over time

Unobservable factors which persist over time, but are not fixed, cannot be eliminated by first differencing or by using other fixed effects estimation methods. However, in some cases it may be possible to deliberately introduce proxy variables to account for these effects. Unobservable factors which are not left in the disturbance terms of the labour supply equations cannot be picked up (unintentionally) in a proxy sense by the child status variables.

Nakamura and Nakamura argue that if there are important unobservable factors which affect the labour supply of a woman year after year, then the effects of these unobservable factors will be embedded in the observable past work behaviour of the woman. In this case, it should be possible to at least partially remove these taste factors from the disturbance terms of the labour supply relationships by introducing some measure of past labour supply into the relationships to be estimated. This is the motivation for the Inertia Model of female labour supply developed in Nakamura and Nakamura (1985b). In the empirical implementation of this model, the variables used as proxies for unobservable preconditions and tastes for work are the observed employment status (worked or did not work) in the previous year, and the hours of work and wage rate in the previous year for those who worked then. In the Inertia Model, labour supply behaviour is found to be persistent in the sense that women who work (do not work) in one year are more likely to continue working (not working) in the next year even after accounting for the effects of all of the variables that have customarily been included in models of female labour supply. This persistence is so strong, in fact, that even women who have just had a baby are found to be likely to continue working if they worked a substantial number of hours in the previous year.

Other studies in which recent work behaviour is taken into account have yielded weak estimated child status responses like those reported by Nakamura and Nakamura. Johnson and Pencavel (1984) and Jones and Long (1980) estimated models of female labour supply controlling for labour supply in the previous year and obtained estimated child status effects which are small in magnitude. Based on a multinomial logit analysis of National Longitudinal Survey (NLS) data, Shaw (1983, p. 49) finds that "even with children present, once the woman had a history of continuous work, family considerations ... did not cause them to work less." Picot (1987) obtains similar results for Canadian women using data from Statistics Canada's Family History Survey. Even (1987) obtains empirical results confirming this finding in a hazard model of career interruptions following childbirth estimated using data from the 1973 National Survey of Family Growth. Even (1987, p. 273) finds that "remaining employed late into pregnancy is a very strong indicator of postchildbirth employment decisions." Further results indicating that child-related effects on market-work productivity are modest for at least some working women can be found in Cole and Zuckerman's (1987) case study of the research performance of women in science.

Like the age, residential origins and education variables sometimes used in computing instrumental child status variables, information on a woman's employment status and work behaviour in the previous year is readily (and ethically) available to both researchers and employers. (Nakamura and Nakamura, 1985a, point out that this information could even be cheaply collected on a recall basis in cross-sectional surveys like the U.S. Census of Population.) Unlike strictly cross-sectional labour supply equations (with or without instrumental child status variables), labour supply equations incorporating variables for work behavior in the previous year explain a large portion of the observed variability over time in the labour supply of individual women (see Nakamura and Nakamura, 1985b). The higher this predictive ability is for a model of labour supply behaviour, the less room there is for systematic "mistakes" in prediction that are the essence of statistical discrimination. Statistical discrimination results precisely when some individuals do not behave (or would not have behaved if given the chance) as is predicted by the (formal or informal) behavioural model which is used for selecting the individuals who will receive desired benefits or opportunities. Another advantage of the estimation approach advocated in Nakamura and Nakamura (1985b) is that it can be adapted relatively easily to allow for differences in child-related labour supply responses associated with characteristics of the mother, the children, or the mother's job or profession.

12.6. Concluding remarks

In this paper, direct and indirect child-related effects on female labour supply are distinguished. The direct effects are associated with changes in women's reservation wage rates, while the indirect effects are conceptualized as operating through the impacts of decisions about human capital accumulation on women's offered wage rates. Basic econometric choices are reviewed concerning the limited nature of the dependent variables in models of female labour supply, sample selection problems, and bias problems associated with specific explanatory variables.

There is considerable controversy in the literature concerning the magnitudes of various child-related effects on women's wage rates. However, both economic theory and available empirical results suggest that women's child bearing and rearing roles are responsible, to some degree, for the apparent wage disadvantage of working women versus working men. If this is so, then the indirect, offered wage-related effects of children on female labour supply will be negative if there is a positive relationship between women's labour supply and their offered wage rates, and positive otherwise. Studies of these wage effects on female labour supply are selectively reviewed in section 4. We conclude that the wage responses of hours of work for working married women are modest, as for men, and possibly negative. This suggests that the indirect effects of children on the hours of work of working women (as opposed to the probability of work) are probably modest. We note that little is known about the importance of indirect child-related effects on the probability of work, largely because information on wage offers is usually available only for those who work.

The rest of the paper deals with the estimation of the direct effects of children on female labour supply. On the basis of comparative estimation results presented by Schultz, we find that direct child-related effects on the probability of work are quantitatively more important than on the hours of work for women who do work. We also side with Schultz and Mroz in concluding that it is important to estimate separate relationships for the probability of work, and for hours of work for women who do work.

Much of the disagreement concerning the magnitude of direct child-related effects on female labour supply is rooted in potential bias problems due to correlations between factors omitted from the labour supply relationships and the included child status variables. Two basic approaches to this problem are discussed.

The instrumental variables (IV) approach involves trying to purge the child status variable(s) of those components correlated with the true error(s) term for the labour supply relationship(s). Studies taking this approach by Schultz (1978) and Rosenzweig and Schultz (1985) are discussed in some detail. An experimentally oriented approach due to Rosenzweig and Wolpin (1980) is also reviewed.

The other approach to dealing with coefficient bias problems is to try to remove from the error term(s) of the labour supply relationship(s) the components that are correlated with the included child status variables. Methodologies which could accomplish this purpose by Heckman and MaCurdy (1980, 1982) and by Nakamura and Nakamura (1985b) are briefly discussed.

Our hope is that this review article will help to clarify basic issues concerning the estimation of child-related effects on female labour supply. In turn, we hope this will encourage further and more fruitful empirical studies on this important research topic.

REFERENCES

Aigner, D. and G.C. Cain (1977), Statistical theories of discrimination in labor markets. *Industrial and Labor Relations Review*, 175-187.

Ajzen, I. (1985). From intentions to actions: a theory of planned behaviour. In: J. Kuhl and J. Beckmann (eds.), *Action-control: from cognition to behavior*. Heidelberg: Springer, 11-39.

Ajzen, I. and M. Fishbein (eds.) (1980), *Understanding attitudes and predicting social behaviour*. Englewood Cliffs: Prentice-Hall.

Ajzen, I. and T.J. Madden (1986), Prediction of goal-directed behaviour: attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22, 453-474.

van den Akker, P.A.M. (1988), Between youth and adulthood: adolescents as unwed mothers. In: Moors and Schoorl (eds.), 323-338.

Almquist, E.M., S.S. Angrist and R. Mickelsen (1980), Women's career aspirations and achievements: college and seven years later. *Sociology of Work and Occupations*, 7, 376-384.

Amemiya, T. (1984), Tobit models: a survey. *Journal of Econometrics*, 24, 3-61.

Andorka, R. (1978), *Determinants of fertility in advanced societies*. London: Methuen and Co.

Ashenfelter, O. and R. Layard (eds.) (1986), *Handbook of labor economics*. Volume 1. Amsterdam: Elsevier.

Avioli, P.S. (1985). The labor-force participation of married mothers of infants. *Journal of Marriage and the Family*, 47, 739-745.

Bagozzi, R.P. (1981a), Attitudes, intentions, and behaviour: a test of some key hypotheses. *Journal of Personality and Social Psychology*, 41, 607-627.

Bagozzi, R.P. (1981b), An examination of the validity of two models of attitude. *Multivariate Behavioral Research*, 16, 323-359.

Bagozzi, R.P. (1984a), A prospectus for theory construction in marketing. *Journal of Marketing*, 48, 11-29.

Bagozzi, R.P. (1984b), Expectancy-value attitude models: an analysis of critical measurement issues. *International Journal of Research in Marketing*, 1, 295-310.

Bagozzi, R.P. (1985), Expectancy-value attitude models: an analysis of critical theoretical issues. *International Journal of Research in Marketing*, 2, 43-60.

Bagozzi, R.P. (1986), Attitude formation under the theory of reasoned action and a purposeful behaviour reformulation. *British Journal of Social Psychology*, 25, 95-107.

Bagozzi, R.P. (1989), An investigation of the role of affective and moral evaluations in the purposeful behaviour model of attitudes. *British Journal of Social Psychology*, 28, 97-113.

Bagozzi, R.P. (1990a), Multidimensional expectancy-value models in marketing research. Unpublished working paper, University of Michigan.

Bagozzi, R.P. (1990b), The role of arousal in the creation and control of the Halo effect. Unpublished working paper, University of Michigan.

Bagozzi, R.P. (1990c), An investigation of the effects of arousal on attitude structure. Unpublished working paper, University of Michigan.
Bagozzi, R.P. (1990d), On the neglect of volition in consumer research: a critique and proposal. Unpublished working paper, University of Michigan.
Bagozzi, R.P., J. Baumgartner and Y. Yi (1989), An investigation into the role of intentions as mediators of the attitude-behaviour relationship. *Journal of Economic Psychology*.
Bagozzi, R.P. and R.E. Burnkrant (1979), Attitude organization and the attitude-behaviour relationship. *Journal of Personality and Social Psychology*, 37, 913-929.
Bagozzi, R.P. and M.F. Van Loo (1978a), Fertility as consumption: theories from the behavioral sciences. *Journal of Consumer Research*, 4, 199-228.
Bagozzi, R.P. and M.F. Van Loo (1978b), Toward a general theory of fertility: a causal modeling approach. *Demography*, 15, 301-320.
Bagozzi, R.P. and M.F. Van Loo (1979), Rejoinder. *Journal of Consumer Research*, 5, 297-302.
Bagozzi, R.P. and M.F. Van Loo (1980), Decision-making and fertility: a theory of exchange in the family. In: Burch (ed.), 91-124.
Bagozzi, R.P. and M.F. Van Loo (1982), Fertility, labor force participation, and tastes: an economic psychology perspective. *Journal of Economic Psychology*, 2, 247-285.
Bagozzi, R.P. and M.F. Van Loo (1987), Individual and couple tastes for children: theoretical, methodological, and empirical issues. *Journal of Economic Psychology*, 8, 191-214.
Bagozzi, R.P. and M.F. Van Loo (1988), An investigation of the relationship between work and family size decisions over time. *Multivariate Behavioral Research*, 23, 3-34.
Bagozzi, R.P. and M.F. Van Loo (1990), Motivational and reasoned processes in the theory of consumer choice. Unpublished working paper, University of Michigan.
Bagozzi, R.P. and P.R. Warshaw (1990a), Trying to consume. *Journal of Consumer Research*, in press.
Bagozzi, R.P. and P.R. Warshaw (1990b), An examination of the etiology of the attitude-behaviour relation for goal-directed and mindless behavior. *Multivariate Behavioral Research*, in press.
Bagozzi, R.P. and Y. Yi (1989), The degree of intention formation as a moderator of the attitude-behaviour relation. *Social Psychology Quarterly*, 53, in press.
Bagozzi, R.P., Y. Yi and J. Baumgartner (1990), The level of effort required for behaviour as a moderator of the attitude-behaviour relation. *European Journal of Social Psychology*, 20, in press.
den Bandt, M.L. (1982), *Vrijwillig kinderloze vrouwen*. Deventer: Van Loghum Slaterus.
Bandura, A. (1977), Self-efficacy: toward a unifying theory of behavioural change. *Psychological Review*, 84, 191-215.
Bandura, A. (1982), Self-efficacy mechanism in human agency. *American Psychologist*, 37, 122-147.
Batra, R. and O. T. Ahtola (1987), The measurement and role of utilitarian and hedonic attitudes. Unpublished working paper, Columbia University.
Bauwens, S. and F. Deven (1989), *De kinderwens bevraagd: factoren die de intentie en de verwachte gevolgen bij de komst van een (volgend) kind beïnvloeden*. Werkdocument nr. 60. Brussel: CBGS.
Beck-Gernsheim, E. (1983), Vom 'Dasein für andere' zum Anspruch auf ein Stück 'eigenes Leben': Individualisierungsprozesse im weiblichen Lebenszusammenhang. *Soziale Welt*, 2, 307-337.

Becker, G.S. (1960), An economic analysis of fertility. In: National Bureau of Economic Research.
Becker, G.S. (1965), A theory of the allocation of time. *Economic Journal*, 75, 493-517.
Becker, G.S. (1975), The allocation of time over the life cycle. In: G.R. Ghez and G.S. Becker (eds.), *The allocation of time and goods over the life cycle*. New York: Columbia University Press, 83-132.
Becker, G.S. (1976), *The economic approach to human behavior*. Chicago: University of Chicago Press.
Becker, G.S. (1981), *A treatise on the family*. Cambridge: Harvard University Press.
Becker, G.S. (1988), Family economics and macro behavior. *American Economic Review*, 78, 3-13.
Becker, G.S. and R.J. Barro (1986), Altruism and the economic theory of fertility. In: Davis *et alii* (eds.), 69-76.
Becker, G.S. and H.G. Lewis (1973), On the interaction between the quantity and quality of children. *Journal of Political Economy*, 81, S279-S288.
Becker, G.S. and H.G. Lewis (1974), Interaction between quantity and quality of children. In: T.W. Schultz (ed.), 81-90.
Becker-Schmidt, R. (1981), Widersprüchliche Realität und Ambivalenz: Arbeitserfahrungen von Frauen in Fabrik und Familie. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 32, 705-725.
Beckman, L.J. (1979), Fertility preferences and social exchange theory. *Journal of Applied Social Psychology*, 9, 147-169.
Beckman, L.J., R. Dizenberg, A.B. Forsythe, and T. Day (1983), A theoretical analysis of antecedents of young couples' fertility decisions and outcomes. *Demography*, 20, 519-533.
Bekkering, J., Y.K. Grift and J.J. Siegers (1986), *Belasting- en premieheffing en arbeidsmarktparticipatie door gehuwde vrouwen: een econometrische analyse*. 's-Gravenhage: Ministerie van Sociale Zaken en Werkgelegenheid.
Ben-Porath, Y. (1973), Labour force participation rates and the supply of labor. *Journal of Political Economy*, 81, 697-704.
Ben-Porath, Y. (1980), Transactional elements in a theory of fertility. In: Höhn and Mackensen (eds.), 49-58.
Berger, M. and L. Wright (1978), Divided allegiance: men, work, and family life. *Counseling Psychologist*, 4, 50-53.
Berger-Schmitt, R. (1986), Innerfamiliale Arbeitsteilung und ihre Determinanten. In: W. Glatzer and R. Berger-Schmitt (eds.), *Haushaltproduktion und Netzwerkhilfe*. Frankfurt: Campus, 105-140.
Berkowitz, L. and E. Walster (1976), *Advances in experimental social psychology*. Volume 9. New York: Academic Press.
Bernard, J. (1981), The good-provider role, its rise and fall. *American Psychologist*, 36, 43-48.
Bernhardt, E.M. (1986), Women's home attachment at first birth: the case of Sweden. *European Journal of Population*, 2, 5-29.
Bernhardt, E.M. (1987), *Labour force participation and childbearing: the impact of the first child on the economic activity of Swedish women*. Stockholm Research Reports in Demography, no. 41.
Bielby, W.T. and J.N. Baron (1986), Men and women at work: sex segregation and statistical discrimination. *American Journal of Sociology*, 91, 759-799.
Birg, H. (1987), *A biography approach to theoretical demography*. Materials of the Institute for Population Research and Social Policy, volume 23. Bielefeld: University of Bielefeld.

Birg, H., D. Filip and E.J. Flöthmann (1990), *Estimation and analysis of cohort and parity specific fertility data for post war West Germany*. Materials of the Institute for Population Research and Social Policy, volume 30. Bielefeld: University of Bielefeld (in German).

Birg, H. and E.J. Flöthmann (1990), Regionsspecifische Wechselwirkungen zwischen Migration und Fertilität im Lebenslauf. *Acta Demografica*, Deutsche Gesellschaft für Bevölkerungswissenschaft, Band 1, Heidelberg.

Birg, H., E.J. Flöthmann and I. Reiter (1989), Biographic analysis of the demographic characteristics of the life histories of men and women in regional labour market cohorts as clusters of birth cohorts. Paper prepared for the Symposium Life Histories and Generations, Netherlands Institute for Advanced Studies in the Humanities and Social Sciences, Wassenaar, June 1989.

Birg, H., E.J. Flöthmann and I. Reiter (forthcoming), *Biographische Theorie der demographischen Reproduktion - Demographische Verhaltensweisen regionaler Arbeitsmarktkohorten im biographischen Kontext*. Frankfurt: Campus.

Blackorby, C., G. Lady, D. Nissen and R.R. Russell (1970), Homothetic separability and consumer budgeting. *Econometrica*, 38, 468-472.

Blackorby, C., D. Primont and R.R. Russell (1978), *Duality, separability, and functional structure: theory and economic applications*. New York: North-Holland.

Blake, J. (1967), Income and reproductive motivation. *Population Studies*, 21, 185-206.

Blake, J. (1968), Are babies consumer durables ? Critique of the economic theory of reproductive motivation. *Population Studies*, 22, 5-25.

Blau, F.D. and M.A. Ferber (1986), *The economics of women, men and work*. Englewood Cliffs: Prentice-Hall.

Blaug, M. (1980), *The methodology of economics*. Cambridge: Cambridge University Press.

Boland, L.A. (1981), On the futility of criticizing the neoclassical maximization hypothesis. *American Economic Review*, 71, 1031-1036.

Bowen, W.G. and T.A. Finegan (1969), *The economics of labor force participation*. Princeton: Princeton University Press.

Bower, G.H. (1981), Mood and memory. *American Psychologist*, 36, 129-148.

Boyle, G.J. (1986), Higher-order factors in the differential emotions scale (DES-III). *Personality and Individual Differences*, 7, 305-310.

Brentano, L. (1872), *Die Arbeitergilden der Gegenwart, Zweiter Band: Zur Kritik der englischen Gewerkvereine*. Leipzig: Duncker und Humblot.

Brentano, L. (1909), *Die Malthus'sche Lehre und die Bevölkerungsbewegung der letzten Dezennien*. München: Abhandlungen der historischen Klasse der Königlich-Bayerischen Akademie der Wissenschaften, no. 24.

Brentano, L. (1910), The doctrine of Malthus and the increase of population during the last decades. *Economic Journal*, 20, 371-393.

Browning, M.J. (1982), Profit function representations for consumer preferences. Mimeo, Bristol University.

Browning, M.J., A. Deaton and M. Irish (1985), A profitable approach to labor supply and commodity demands over the life-cycle. *Econometrica*, 53, 503-543.

Büchl, W., L. von Rosenstiel and M. Stengel (1979), Wohnform und Kinderwunsch. *Zeitschrift für Bevölkerungswissenschaft*, 5, 185-198.

Bulatao, R.A. (1979), *Further evidence on the nature of the transition in the value of children*. Paper no. 60-B, East-West Population Institute, Honolulu.

Bulatao, R.A. (1981), Values and disvalues of children in successive childbearing decisions. *Demography*, 18, 1-26.

Bulatao, R.A. (1986), Does economic theory explain fertility ? *Family Planning Perspectives*, 18, 283-284.

Bulatao, R.A. and J.T. Fawcett (1981), Dynamic perspectives in the study of fertility decision-making: successive decisions within the fertility career. In: International Union for the Scientific Study of Population, *International Population Conference, Manila*. Volume 1. Liège: IUSSP, 433-449.

Burch, T.K. (ed.) (1980), *Demographic behaviour*. Boulder: Westview Press.

Burch, T.K. (1987), *Babel revisited: the role of ideas in explanations of human behaviour*. Discussion Paper 87-1, Population Studies Centre, University of Western Ontario.

Burnkrant, R.E. and R.J. Page (1988), The structure and antecedents of the normative and attitudinal components of Fishbein's theory of reasoned action. *Journal of Experimental Social Psychology*, 24, 66-87.

Busfield, J. and M. Paddon (1977), *Thinking about children. Sociology and fertility in post-war England*. Cambridge: Cambridge University Press.

Butz, W.P. and M.P. Ward (1979), The emergence of countercyclical U.S. fertility. *American Economic Review*, 69, 318-328.

Cain, G.G. and M.D. Dooley (1976), Estimation of a model of labor supply, fertility, and wages of married women. *Journal of Political Economy*, 84, S179-S199.

Caldwell, J.C. and A.G. Hill (1988), Recent developments using micro-approaches to demographic research. In: J.C. Caldwell, A.G. Hill and V.J. Hull (eds.), *Micro-approaches to demographic research*. London: Kegan Paul International, 1-24.

Calhoun, A.C. and T.J. Espenshade (1988), Childbearing and wives' foregone earnings. *Population Studies*, 42, 5-37.

Cameron, S. (1985), Towards a synthesis of economic and sociological theories of family labour supply. *Journal of Interdisciplinary Economics*, 1, 43-57.

Canlas, D.B. (1981), An economic analysis of marital fertility: some notes. *Philippine Economic Journal*, 20, 227-237.

Carliner, G., W.C. Robinson and N. Tomes (1984), Lifetime models of female labor supply, wage rates, and fertility. In: Schultz and Wolpin (eds.), 1-27.

Cigno, A. and J.F. Ermisch (1989), A microeconomic analysis of the timing of births. *European Economic Review*, 33, 737-760.

Clay, D.C. and J.J. Zuiches (1980), Reference groups and family size norms. *Population and Environment*, 3, 262-279.

Cochrane, S.H. (1979), *Fertility and education: what do we really know ?* World Bank Staff Occasional Papers No. 26. Baltimore: Johns Hopkins University Press.

Cole, J.R. and H. Zuckerman (1987), Marriage, motherhood and research performance in science. *Scientific American*, 119-125.

Coleman, S. (1983), The tempo of family formation. In: Plath (ed.), 183-214.

Coleman, J.S. (1990), *Foundations of social theory*. Cambridge: Harvard University Press.

Coombs, L.C. (1974), The measurement of family size preferences and subsequent fertility. *Demography*, 11, 587-611.

Corcoran, M., G.J. Duncan and M. Ponza (1983), Longitudinal analysis of white women's wages. *Journal of Human Resources*, 18, 497-520.

Cox, D.R. (1972), Regression models and lifetables. *Journal of the Royal Statistical Society*, Series B, 34, 187-220.

Cox, D.R. (1984), Panel estimates of the effects of career interruptions on the earnings of women. *Economic Inquiry*, 22, 386-403.

Cramer, J.C. (1980), Fertility and female employment: problems of causal direction. *American Sociological Review*, 45, 167-190.

Cramer, J.S. (1986), Het economisch onderzoek in de toekomst. In: H.M. Jolles, A.P. Plompen and H. Weijma (eds.), *Vijftien wetenschappen vijftien jaar verder*. 's-Gravenhage: Staatsuitgeverij, 37-52.

David, P.A. (1986), Comment on Becker and Barro's 'altruism and the economic theory of fertility'. In: Davis *et alii* (eds.), 77-86.

Davidson, A.R. and J.J. Jaccard (1975), Population psychology: a new look at an old problem. *Journal of Personality and Social Psychology*, 31, 1073-1082.

Davidson, A.R. and J.J. Jaccard (1979), Variables that moderate the attitude-behavior relation: results of a longitudinal survey. *Journal of Personality and Social Psychology*, 31, 1073-1082.

Davis, K. (1984), Wives and work: the sex role revolution and its consequences. *Population and Development Review*, 10, 397-417.

Davis, K., M.S. Bernstam and R. Ricardo-Campbell (eds.) (1986), *Below-replacement fertility in industrial societies: causes, consequences, policies*. A Supplement to Volume 12 of Population and Development Review.

Debusschere, R. and F. Deven (1981), *Het meten van de gezinsgroottevoorkeur*. CBGS Report 47. Brussel: CBGS.

Deven, F. (1979), The meanings of having children. In: R. Mackensen (ed.), *Seminarsbericht Empirische Untersuchungen zum generativen Verhalten*. Soziologischen Arbeitshefte no. 17, Berlin: Technische Universität, 54-68.

Deven, F. (1982), *Verwachtingen omtrent de komst van een (volgend) kind*. CBGS Report 57. Brussel: CBGS.

Deven, F. (1983), Parity-specific costs and benefits of childbearing: longitudinal data on decision-making by couples. In: R.L. Cliquet *et alii* (eds.), *Population and family in the low countries III*. NIDI/CBGS Publications Volume 10. Voorburg/Brussels: NIDI/CBGS, 109-121.

Deven, F. (1988), Characteristics, attitudes and expectations of voluntarily childless women, women intending to have children and mothers. In: H. Moors and J. Schoorl (eds.), 372-389.

Dooley, M.D. (1982), Labor supply and fertility of married women: an analysis with grouped and individual data from the 1970 U.S. Census. *Journal of Human Resources*, 17, 499-532.

Duesenberry, J.S. (1960), Comment on 'An economic analysis of fertility'. In: National Bureau for Economic Research, 231-234.

Easterlin, R.A. (1969), Towards a socioeconomic theory of fertility. In: S.J. Behrman, L. Corsa and R. Freedman (eds.), *Fertility and family planning: a world view*. Ann Arbor: University of Michigan Press, 127-156.

Easterlin, R.A. (1975), A framework for fertility analysis. *Studies in Family Planning*, 6, 54-63.

Easterlin, R.A. (1987), *Birth and fortune*. Chicago: University of Chicago Press.

Easterlin, R.A., R.A. Pollak and M.L. Wachter (1980), Toward a more general economic model of fertility determination: endogenous preferences and natural fertility. In: R.A. Easterlin (ed.), *Population and economic change in developing countries*. Chicago: University of Chicago Press, 81-149.

Eatwell, J., M. Milgate and P. Newman (1987) (eds.), *The new Palgrave: a dictionary of economics*. Volume 4. London: MacMillan, 287-297.

Edwards, W. (1961), Behavioural decision theory. *Annual Review of Psychology*, 12, 473-498.

Elchardus, M. (1984), Life cycle and life course: the scheduling and temporal integration of life. In: S. Feld and R. Lesthaeghe (eds.), *Population and social outlook*. Brussels: Koning Boudewijn Stichting, 251-267.

England, P. (1982), The failure of human capital theory to explain occupational sex segregation. *Journal of Human Resources*, 17, 358-370.

England, P. (1984), Wage appreciation and depreciation: a test of neoclassical economic explanations of occupational sex segregation. *Social Forces*, 62, 726-749.

Erikson, E.H. (1980), *Identity and the life cycle*. New York: Norton and Company.

Ermisch, J.F. (1989), Purchased child care, optimal family size and mothers' employment: theory and econometric analysis. *Journal of Population Economics*, 2, 79-102.

Etzioni, A. (1967), Mixed scanning: a third approach to decision making. *Public Administration Review*, 27, 385-292.

Even, W.E. (1982), Career interruptions following childbirth. *Journal of Labor Economics*, 5, 255-277.

Everitt, A.V. (1982), The genetic clock-hormone theory of aging. In: S. Preston (ed.), *Biological and social aspects of mortality and the length of life*. Liège: Ordina, 279-300.

Eysenck, H.J. (1986), Models and paradigms in personality research. In: A. Angleiter, A. Furnham and G. van Heck (eds.), *Personality psychology in Europe, Volume 2: Current trends and controversies*. Lisse: Swets and Zeitlinger, 213-223.

Falbo, T. and H.A. Becker (1980), The Fishbein model: triumphs, problems and prospects. In: Burch (ed.), 125-140.

Fawcett, J.T. and F. Arnold (1973), The value of children: theory and method. *Representative Research in Social Psychology*, 4, 23-36.

Fishbein, M. (1982), Toward an understanding of family planning behaviors. *Journal of Applied Social Psychology*, 2, 214-227.

Fishbein, M. and I. Ajzen (1975), *Belief, attitude, intention and behavior: an introduction to theory and research*. Reading: Addison-Wesley.

Fleisher, B.M. and G.F. Rhodes Jr. (1979), Fertility, women's wage rates, and labor supply. *American Economic Review*, 69, 14-24.

Fried, E.S., S.L. Hofferth and J.R. Udry (1980), Parity specific and two-sex utility models of reproductive intentions. *Demography*, 17, 1-12.

Fried, E.S. and J.R. Udry (1980), Normative pressures on fertility planning. *Population and Environment*, 3, 199-209.

Fuchs, V.R. (1983), *How we live: an economic perspective on Americans from birth to death*. Cambridge: Harvard University Press.

Fuchs, V.R. (1986), *The health economy*. Cambridge: Harvard University Press.

Fürstenberg, F. and J. Mörth (1979), Religionssoziologie. In: *Handbuch der empirischen Sozialforschung*. Band 14. Stuttgart: Enke.

van Geert, P. (1986), The concept of development. In: P. van Geert (ed.), *Theory building in developmental psychology*. Amsterdam: North Holland, 3-50.

Georgescu-Roegen, N. (1970), The economics of production. *American Economic Review*, 60, 1-9.

Gorman, W.M. (1959), Separable utility and aggregation. *Econometrica*, 27, 469-481.

Gorman, W.M. (1987), Separability. In: J. Eatwell *et alii* (eds.), 305-312.

Greene, W.H. and A.O. Quester (1982), Divorce risk and wives' labor supply behavior. *Social Science Quarterly*, 63, 16-27.

Grift, Y.K. and J.J. Siegers (1988), Supply determinants of part-time work of Dutch married women: the influence of taxes and social premiums. Paper presented at the Second Annual Meeting of the European Society for Population Economics, Mannheim, June 23-25, 1988.

Grift, Y.K. and J.J. Siegers (1989), Estimating an individual utility labour supply model with a family budget constraint and with Pareto optimal outcomes. Paper presented at the Third Annual Meeting of the European Society for Population Economics, Bouray-sur-Juine, June 8-10, 1989.

Gronau, R. (1974), Wage comparisons - a selectivity bias. *Journal of Political Economy*, 82, 1119-1143.

Groot, L.F.M., J.J. Schippers and J.J. Siegers (1988), The effect of interruptions and part-time work on women' wage rate: a test of the variable-intensity model. *De Economist*, 136, 220-238.

Groot, L.F.M., J.J. Schippers and J.J. Siegers (forthcoming), The effect of unemployment, temporary withdrawals and part-time work on workers' wage rates. *European Sociological Review*.

Hass, P.H. (1974), Wanted and unwanted pregnancies: a fertility decision-making model. *Journal of Social Issues*, 30, 125-165.

Hausman, J.A. (1979), Individual discount rates and the purchase and utilization of energy-using durables. *Bell Journal of Economics*, 10, 33-54.

Heckman, J.J. (1974a), Life cycle consumption and labor supply: an explanation of the relationship between income and consumption over the life cycle. *American Economic Review*, 64, 188-194.

Heckman, J.J. (1974b), Shadow prices, market wages and labor supply. *Econometrica*, 42, 679-694.

Heckman, J.J. (1976a), The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models. *Annals of Economic and Social Measurement*, 5, 475-492.

Heckman, J.J. (1976b), A life-cycle model of earnings, learning, and consumption. *Journal of Political Economy*, 84, S11-S44.

Heckman, J.J. (1977), Sample selection bias as a specification error. *Econometrica*, 47, 153-162.

Heckman, J.J. (1980), Sample selection bias as a specification error. In: J. Smith (ed.), *Female labor supply*. Princeton: Princeton University Press, 206-248.

Heckman, J.J. (1981), Heterogeneity and state dependence. In: S. Rosen (ed.), *Studies in labor markets*. Chicago: University of Chicago Press, 91-139.

Heckman, J.J. (1987), Selection bias and self-selection. In: J. Eatwell *et alii* (eds.), 287-297.

Heckman, J.J., V.J. Hotz and J. Walker (1985), New evidence on the timing and spacing of births. *American Economic Review*, 75, 179-184.

Heckman, J.J. and T.E. MaCurdy (1980), A life cycle model of female labour supply. *Review of Economic Studies*, 47, 47-74.

Heckman, J.J. and T.E. MaCurdy (1982), Corrigendum on a life cycle model of female labour supply. *Review of Economic Studies*, 49, 659-660.

Held, T. (1986), Institutionalization and de-institutionalization of the life course. *Human Development*, 29, 157-162.

Helson, H. (1964), *Adaption-level theory*. New York: Harper and Row.

Hill, C.R. and F.P. Stafford (1985a), Lifetime fertility, child care, and labor supply. In: F.T. Juster *et alii* (eds.), 471-492.

Hill, C.R. and F.P. Stafford (1985b), Parental care of children: time diary estimates of quantity, predictability, and variety. In: F.T. Juster *et alii* (eds.), 415-437.

Hiller, D.V. and J. Dyehouse (1987), A case for banishing dual-career marriages from the research literature. *Journal of Marriage and the Family*, 49, 787-795.

Hirsch, F. (1978), *Social limits to growth*. Cambridge: Harvard University Press.

Hoem, B. and J.M. Hoem (1989), The impact of women's employment on second and third births in modern Sweden. *Population Studies*, 43, 47-67.

Hoffman, A. (1978), The value of children to parents in the United States. *Journal of Population*, 1, 91-131.

Höhn, C. and R. Mackensen (1980) (eds.), *Determinants of fertility trends: theories re-examined*. Liège: Ordina Editions.

Holden, K.C. (1983), Changing employment patterns of women. In: Plath (ed.), 36-46.

Hotz, V.J. and R.A. Miller (1988), An empirical analysis of life cycle fertility and female labor supply. *Econometrica*, 56, 91-118.

Ickes, W. (1985), Introduction. In: W. Ickes (ed.), *Compatible and incompatible relationships*. New York: Springer Verlag, 1-7.

Impens, K. (1987), De impact van werkloosheid bij vrouwen op de vruchtbaarheid in Vlaanderen. *Bevolking en Gezin*, 3, 73-98.

Inglehart, R. (1977), *The silent revolution*. Princeton.

Inglehart, R. (1979), *Married women and work*. Toronto.

Inglehart, R. (1989), *Kultureller Umbruch*. Frankfurt: Campus.

Janis, I.L. and L. Mann (1977), *Decision making: a psychological analysis of conflict, choice and commitment*. New York: Free Press.

Jansweijer, R.M.A., E.M. Pot, H.J. Groenendijk and H.M. Langeveld (1988), *Haalbaar en betaalbaar: arbeid en kinderzorg na 1990*. Rotterdam: Erasmus Universiteit, sectie Vrouwenstudies.

Johnson, M.D. and C.P. Puto (1988), A review of consumer judgment and choice. In: M.J. Houston (ed.), *Review of marketing 1987*. Chicago: American Marketing Association.

Johnson, T.R. and J.H. Pencavel (1984), Dynamic hours of work functions for husbands, wives, and single females. *Econometrica*, 52, 363-389.

Johnson, W.R. and J. Skinner (1985), Labor supply and marital se-paration. Paper presented at the Economic Demography Workshop, Population Association of America.

Jones, E.B. and J.E. Long (1979), Part-week work and human capital investment by married women. *Journal of Human Resources*, 14, 563-578.

Joshi, H. (1988), *Changing roles of women in the British labour market and the family*. Discussion Paper in Economics 88/13, Birkbeck College, University of London.

Jürgens, H.W. and K. Pohl (1975), *Kinderzahl - Wunsch und Wirklichkeit*. Stuttgart.

Juster, F.T. and F.P. Stafford (eds.) (1985), *Time, goods, and well-being*. Ann Arbor: University of Michigan.

van de Kaa, D.J. (1988), *The second demographic transition revisited: theories and expectations*. Werkstukken no. 109, Planologisch Demografisch Instituut, Universiteit van Amsterdam.

van de Kaa, D.J. and H.G. Moors (1982), Social status, social structure and fertility: a critical review with special reflections on the Netherlands. In: Département de Démographie de l'Université de Louvain (ed.), *Population et structures sociales*, Liège: Ordina, 107-127.

Kahn-Hut, R., A.K. Daniels and R. Colvard (1982), *Women and work*. New York.

Kapteyn, A. (ed.) (1987), *Demografische veranderingen en economische ontwikkelingen*. Preadviezen voor de Koninklijke Vereniging voor de Staathuishoudkunde. Leiden: Stenfert Kroese.

Klages, H. and P. Kmieciak (1979), *Wertwandel und gesellschaftlicher Wandel*. Frankfurt.

Keeley, M.C. (1975), A comment on 'An interpretation of the economic theory of fertility'. *Journal of Economic Literature*, 13, 467-468.

Kenny, D.A. and C.M. Judd (1984), Estimating the nonlinear and interactive effects of latent variables. *Psychological Bulletin*, 96, 201-210.

Keyfitz, N. (1977), *Applied mathematical demography*. New York: Wiley.

Killingsworth, M.R. (1983), *Labor supply*. Cambridge: Cambridge University Press.

Killingsworth, M.R. and J.J. Heckman (1986), Female labor supply: a survey. In: Ashenfelter and Layard (eds.), 103-204.

Kinsella, R.P. (1975), A note on the new home economics. *International Journal of Social Economics*, 2, 249-257.

Kiser, C.V. (1979), Comments on 'Fertility as consumption: theories from the behavioral sciences'. *Journal of Consumer Research*, 5, 284-287.

Kiser, C.V. and P.K. Whelpton (1953), Resume of the Indianapolis study of social and psychological factors affecting fertility. *Population Studies*, 7, 95-110.

Kiser, C.V. and P.K. Whelpton (1958), Social and psychological factors affecting fertility. *Milbank Memorial Fund Quarterly*, 36, 282-329.

Kleining, G. and H. Moore (1968), Soziale Selbsteinstufung: ein Instrument zur Messung sozialer Schichten. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 20, 273-292.

Klijzing, E., J. Siegers, N. Keilman and L. Groot (1988), Static versus dynamic analysis of the interaction between female labour force participation and fertility. *European Journal of Population*, 4, 97-116.

Kooreman, P. (1986), *Essays on the microeconomic analysis of household behaviour*. PhD-dissertation, Tilburg: Katholieke Universiteit Brabant.

Korpi, T. (1989), *Entry into employment after first birth: a reexamination of the transitions to full-time and part-time employment among Swedish mothers*. Stockholm Research Reports in Demography, no 53.

Lakatos, I. (1970), Falsification and the methodology of scientific research programmes. In: I. Lakatos and A. Musgrave (eds.), *Criticism and the growth of knowledge*. Cambridge: Cambridge University Press.

Lancaster, K.J. (1966), A new approach to consumer theory. *Journal of Political Economy*, 74, 132-157.

Larsson, L.G. (1977), Economic models of household behavior. In: Å. Andersson and I. Holmberg (eds.), *Demographic, economic and social interaction*, Cambridge: Ballinger, 119-145.

Latsis, S.J. (1976), A research programme in economics. In: S.J. Latsis (ed.), *Method and appraisal in economics*. Cambridge: Cambridge University Press, 1-41.

Lazear, E.P. and R.T. Michael (1988), *Allocation of income within the household*. Chicago: University of Chicago Press.

Lehr, U. (1984), Stereotypie und Wandlung der Geschlechtsrollen. In: A. Heigl-Evers (ed.), *Sozialpsychologie*. Weinheim: Beltz.

Lehrer, E. and M. Nerlove (1986), Female labor force behavior and fertility in the United States. *Annual Review of Sociology*, 12, 181-204.

Leibenstein, H. (1957), *Economic backwardness and economic growth: studies in the theory of economic development*. New York: Wiley.

Leibenstein, H. (1974), An interpretation of the economic theory of fertility: promising path or blind alley ? *Journal of Economic Literature*, 12, 457-479.

Leibenstein, H. (1979), Comments on 'Fertility as consumption: theories from the behavioral sciences'. *Journal of Consumer Research*, 5, 287-290.

Leibenstein, H. (1980), Relaxing the maximization assumption in the economic theory of fertility. In: Höhn and Mackensen (eds.), 35-48.

Lerner, R.M. and M.B. Kauffman (1985), The concept of development in contextualism. *Developmental Review*, 5, 309-333.

Levinson, D.J. *et alii* (1978), *The seasons of a man's life*. New York: Ballantine Books.

Levinson, D.J. and W.L. Gooden (1985), The life cycle. In: N.I. Kaplan and B.J. Sadock (eds.), *Comprehensive textbook of psychiatry*. Baltimore: Williams and Wilkins, 1-13.

Lewis, H.G. (1967), On income and substitution effects in labor force participation. Unpublished manuscript, University of Chicago.

Lindenberg, S. (1982), Sharing groups: theory and suggested applications, *Journal of Mathematical Sociology*, 9, 33-62.

Lindenberg, S. (1984a), Normen und die Allokation sozialer Wertschätzung. In: H. Todt (ed.), *Normengeleitetes Verhalten in den Sozialwissenschaften*. Berlin: Duncker und Humblot, 169-191.

Lindenberg, S. (1984b), Preference versus constraints. *Journal of Institutional and Theoretical Economics* (ZgS), 140, 96-103.

Lindenberg, S. (1985), An assessment of the new political economy: its potential for the social sciences and for sociology in particular. *Sociological Theory*, 3, 99-114.

Lindenberg, S. (1986), The paradox of privatization in consumption. In: A. Diekmann and P. Mitter (eds.), *Paradoxial effects of social behavior*. Heidelberg/Wien: Physica-Verlag, 297-310.

Lindenberg, S. (1988), Contractual relations and weak solidarity: the behavioral basis of restraints on gain-maximization. *Journal of Institutional and Theoretical Economics* (ZgS), 144, 39-58.

Lindenberg, S. (1989), Choice and culture: the Behavioral basis of cultural impact on transactions. In: H. Haferkamp (ed.), *Social structure and culture*. Berlin: de Gruyter.

Liska, A.E. (1984), A critical examination of the causal structure of the Fishbein/Ajzen attitude-behavior model. *Social Psychology Quarterly*, 47, 61-74.

MaCurdy, T. (1977), Labor supply decisions over the life cycle. Unpublished manuscript, University of Chicago.

MaCurdy, T. (1978), *Two essays on the life cycle*. PhD-thesis, University of Chicago.

Marini, M.M. and B. Singer (1988), Causality in social sciences. *Sociological methodology*, 18, 347-409.

Maslow, A.H. (1954), *Motivation and personality*. New York: Harper and Row.

Maslow, A.H. (1973), A theory of human motivation. *Psychological Review*, 50, 370-396.

McClelland, G.H. (1983). Family-size desires as measures of demand. In: R.A. Bulatao and R.D. Lee (eds.), *Determinants of fertility in developing countries. Volume 1: Supply and Demand for Children*. New York: Academic Press, 288-343.

McKenry, P., S.J. Price, P.B. Gordon and N.M. Rudd (1986), Characteristics of husband's family work and wives' labor force involvement. In: R. Lewis and R.E. Salt (eds.), *Men in Families*. Beverly Hills: Sage, 73-83.

Michael, R.T. and G.S. Becker. (1973), On the new theory of consumer behavior. *Swedish Journal of Economics*, 75, 378-396.

Miller, P.H. (1983), *Theories of developmental psychology*. San Francisco: Freemand and Company.

Miller, W.B. (1980), *The psychology of reproduction*. Springfield: National Technical Information Service.

Miller, W.B. (1986), Proception: an important fertility behavior. *Demography*, 23, 579-594.

Mincer, J. (1962), Labor force participation of married women: a study of labor supply. In: National Bureau of Economic Research, *Aspects of labor economics*. Princeton: Princeton University Press, 63-97.

Mincer, J. (1963), Market prices, opportunity costs and income effects. In: C.F. Christ (ed.), *Measurement in economics*. Stanford, 67-82.

Mincer, J. and H. Ofek (1982), Interrupted work careers: depreciation and restoration of human capital. *Journal of Human Resources*, 17, 3-24.

Mincer, J. and S. Polachek (1974), Family investments in human capital: earnings of women. In: Schultz (ed.), 397-429.

Mincer, J. and S. Polachek (1978), Women's earnings reexamined. *Journal of Human Resources*, 13, 118-134.

Mischel, W. (1977), On the future of personality measurement. *American Psychologist*, 32, 246-254.

Mitchell, W.C. (1912), The backward art of spending money. *American Economic Review*, 2, 269-281.

Moffitt, R.A. (1984a). Optimal life-cycle profiles of fertility and labor supply. In: Schultz and Wolpin (eds.), 29-50.

Moffitt, R.A. (1984b), Profiles of fertility, labour supply and wages of married women: a complete life cycle model. *Review of Economic Studies*, 51, 263-278.

Mol, P.W., J.C. van Ours and J.J.M. Theeuwes (1988), *Honderd jaar gehuwde vrouwen op de arbeidsmarkt*. OSA-werkdocument nr. 4. 's-Gravenhage: Organisatie voor Strategisch Arbeidsmarktonderzoek.

Mombert, P. (1907), *Studien zur Bevölkerungsbewegung in Deutschland*. Karlsruhe: Braun.

Moore-Ede, M.C., F.M. Sulzman and C.A. Fuller (1982), *The clocks that time us: physiology of the circadian timing system*. Cambridge: Harvard University Press.

Mocks, H.G. (1974), *Child spacing and family size in the Netherlands*. Leiden: Stenfert Kroese.

Mocks, H.G. (1986), Moeder worden op oudere leeftijd: een nieuwe trend ? *Demos*, 2, 9-12.

Moors, H. and J. Schoorl (eds.) (1988), *Lifestyles, contraception and parenthood*. The Hague/Brussels: NIDI/CBGS.

Mott, F.L. (1972), Fertility, life-cycle stage and female labor force participation in Rhode Island: a retrospective view. *Demography*, 9, 173-185.

Mott, F.L. and D. Shapiro (1983), Complementarity of work and fertility among young American mothers. *Population Studies*, 37, 239-252.

Mroz, T.A. (1987), The sensitivity of an empirical model of married women's hours of work to economic and statistical assumptions. *Econometrica*, 55, 765-799.

Muth, R.F. (1966), Household production and economic demand functions. *Econometrica*, 34, 699-708.

Nakamura, A. and M. Nakamura (1981a), A comparison of the labor force behavior of married women in the United States and Canada, with special attention to the impact of income taxes. *Econometrica*, 49, 451-489.

Nakamura, A. and M. Nakamura (1981b), On the relationships among several specification error tests presented by Durbin, Wu and Hausman. *Econometrica*, 49, 1583-1588.

Nakamura, A. and M. Nakamura (1983), Part-time and full-time work behaviour of married women: a model with a doubly truncated dependent variable. *Canadian Journal of Economics*, 16, 229-257.

Nakamura, A. and M. Nakamura (1984), On the roles of child status and marital status variables in models of the labor force behavior of married women. Paper presented at the Econometric Society Meeting in Dallas, December 1984.

Nakamura, A. and M. Nakamura (1985a), Dynamic models of the labor force behavior of married women which can be estimated using limited amounts of past information. *Journal of Econometrics*, 27, 273-298.

Nakamura, A. and M. Nakamura (1985b), *The second paycheck: a socioeconomic analysis of earnings*. New York: Academic Press.

Nakamura, A. and M. Nakamura (1985c), On the performance of tests by Wu and by Hausman for detecting the ordinary least squares bias problem. *Journal of Econometrics*, 29, 213-227.

Nakamura, A. and M. Nakamura (1987), Theories and evidence concerning the impacts of children on female labor supply. Paper presented at the Canadian Economic Association Meeting in Hamilton, Ontario, June 1987.

Nakamura, A. and M. Nakamura (1989), Selection bias: more than a female phenomenon. In: B. Raj (ed.), *Advances in econometrics and modelling*. Deventer: Kluwer, 143-158.

Nakamura, M., A. Nakamura and D. Cullen (1979), Job opportunities, the offered wage, and the labor supply of married women. *American Economic Review*, 69, 787-805.

Namboodiri, N.K. (1972a), Integrative potential of a fertility model: an analytical test. *Population Studies*, 26, 465-485.

Namboodiri, N.K. (1972b), Some observations on the economic framework for fertility analysis. *Population Studies*, 26, 185-206.

Namboodiri, N.K. (1974), Which couples at given parities expect to have additional births ? An exercise in discriminant analysis. *Demography*, 11, 45-56.

Namboodiri, N.K. (1975), Review of: T.W. Schultz (ed.), Economics of the family: marriage, children and human capital. *Demography*, 12, 561-569.

Namboodiri, N.K. (1978), On fertility analysis. Where sociologists, economists, and biologists meet. In: J.M. Yinger and S.J. Cutler (eds.), *Major social issues: a multidisciplinary view*. New York: Free Press, 295-309.

Namboodiri, N.K. (1979), Fertility as consumption: theories from the behavioral sciences: Comment. *Journal of Consumer Research*, 5, 290-292.

Namboodiri, N.K. (1980), A look at fertility model building from different perspectives. In: Burch (ed.), 71-90.

Namboodiri, N.K. (1983), Sequential fertility decision making and the life course. In: R.A. Bulatao and R.D. Lee (eds.), *Determinants of fertility in developing countries. Volume 2: Fertility regulation and institutional influences*. New York: Academic Press, 444-472.

National Bureau for Economic Research (1960), *Demographic and economic change in developed countries*. Princeton: Princeton University Press.

Nerdinger, F.W. (1984), Stabilität, Zentralität und Verhaltensrelevanz von Werten. *Problem und Entscheidung*, 26, 86-110.

Nerdinger, F.W. *et alii* (1984), Kinderwunsch und generatives Verhalten: ausgewählte Ergebnisse einer Längsschnittstudie an jungen Ehepaaren. *Zeitschrift für experimentelle und angewandte Psychologie*, 31, 464-482.

Ni Bhrolchain, M. (1986a), Women's paid work and the timing of births: longitudinal evidence. *European Journal of Population*, 2, 43-70.

Ni Bhrolchain, M. (1986b), The interpretation and role of work-associated accelerated childbearing in post-war Britain. *European Journal of Population*, 2, 135-154.

Niphuis-Nell, M. (1981), *Motivatie voor ouderschap*. Deventer: Van Loghum Slaterus.

Niphuis-Nell, M. and H.G. Moors (1979), *De constructie van meetinstrumenten in het NOVOM-1975*. Intern Rapport no. 16. Voorburg: NIDI.

Noelle-Neumman, E. and B. Strümpel (1984), *Macht Arbeit krank, macht Arbeit glücklich ?* München: Piper.

Oberschall, A. and E.M. Leifer (1986), Efficiency and social institutions: uses and misuses of economic reasoning in sociology. *Annual Review of Sociology*, 12, 233-254.

Okun, B. (1960), Comment. In: National Bureau for Economic Research, 235-240.

Opp, K.D. (1985a), Sociology and economic man. *Journal of Institutional and Theoretical Economics* (ZgS), 141, 213-243.

Opp, K.D. (1985b), *Die Entstehung sozialer Normen*. Tübingen: Mohr Siebeck.
Ory, M.G. (1978), The decision to parent or not: normative and structural components. *Journal of Marriage and the Family*, 40, 531-539.
Paarsch, H. (1984), A Monte Carlo comparison of estimators for censored regression models. *Journal of Econometrics*, 24, 197-214.
Parsons, T. (1937/1968), *The structure of social action*. Paperback edition. New York: Free Press.
Parsons, T. (1954), The incest taboo in relation to social structure and the socialization of the child. *The Britisch Journal of Sociology*, 5, 2.
Pauwels, K., M. de Wachter, L. Deschamps and W. van Dongen (1987), The labour force participation by young women with a family: a lasting commitment. In: H.G. Moors *et alii* (eds.), *Population and family in the low countries V*. The Hague/Brussels: NIDI/CBGS, 1-13.
Pencavel, J. (1986), Labor supply of men: a survey. In: Ashenfelter and Layard (eds.), 3-102.
Perlman, M. (1975), Review of: T.W. Schultz (ed.), Economics of the family: marriage, children and human capital. *Demography*, 12, 549-556.
Phelps, E. (1972), The statistical theory of racism and sexism. *American Economic Review*, 62, 659-661.
Picot, G. (1987), Modelling the lifetime employment patterns of Canadians. In: Proceedings of conference on the family in crisis.
Plath, D.W. (ed.) (1983), *Work and lifecourse in Japan*. Albany: State University of New York Press.
Polachek, S. (1976), Occupational segregation: an alternative hypothesis. *Journal of Contemporary Business*, 5, 1-12.
Polachek, S. (1979), Occupational segregation among women: theory, evidence, and a prognosis. In: C. Lloyd, E. Andrews and C. Gilroy (eds.), *Women in the labor market*, New York: Columbia University Press, 137-157.
Polachek, S. (1981), Occupational self-selection: a human capital approach to sex differences in occupational structure. *Review of Economics and Statistics*, 58, 60-69.
Population Studies Centre, University of Western Ontario (1988), *Canadian fertility survey, 1984: public use micro-data documentation*.
Presser, H.B. (1986), Shift work among American women and child care. *Journal of Marriage and the Family*, 48, 551-564.
Presser, H.B. (1988), Shift work and child care among young dual-earner American parents. *Journal of Marriage and the Family*, 50, 133-148.
Regan, M.C. and H.E. Roland (1985), Rearranging family and career priorities: professional women and men of the eighties. *Journal of Marriage and the Family*, 47, 985-992.
Reid, M.G. (1934), *Economics of household production*. New York: Wiley.
Robbins, L. (1930), On the elasticity of demand for income in terms of effort. *Economica*, 29, 123-129.
Robinson, W.C. (1987), The time cost of children and other household production. *Population Studies*, 41, 313-323.
Robinson, W.C. and N. Tomes (1985), More on the labour supply of Canadian women. *Canadian Journal of Economics*, 18, 156-163.
Rogers, B. (1980), *The domestication of women*. London: Kogan Page.
von Rosenstiel, L. (1987), *Grundlagen der Organisationspsychologie*. Stuttgart: Poeschel.
von Rosenstiel, L. *et alii* (1986), *Einführung in die Bevölkerungspsychologie*. Darmstadt: Wissenschaftliche Buchgesellschaft.
von Rosenstiel, L., G. Oppitz and M. Stengel (1982), Motivation of reproductive behaviour: a theoretical concept and its application. In: Höhn and Mackensen (eds.), 79-93.

von Rosenstiel, L. and M. Stengel (1987), *Identifikationskrise ? Zum Engagement in betrieblichen Führungspositionen*. Bern: Huber.
Rosenzweig, M.R. and T.P. Schultz (1985), The demand for and supply of births: fertility and its life cycle consequences. *American Economic Review*, 75, 992-1015.
Rosenzweig, M.R. and K.I. Wolpin (1980), Life-cycle labor supply and fertility: causal inferences from household models. *Journal of Political Economy*, 88, 328-348.
Roth, J.A. (1963), *Timetables*. Indianapolis: Bobbs-Merrill.
Roth, J.A. (1983), Timetables and the lifecourse in post-industrial society. In: Plath (ed.), 248-259.
Rozendal, P.J., H.G. Moors and F.L. Leeuw (1985), *Het bevolkingsvraagstuk in de jaren '80*. Voorburg: NIDI.
Rubin, Z. (1973), *Liking and Loving*. New York: Holt, Rinehart and Winston.
Runyan, W.M. (1984), *Life histories and psychobiography: explorations in theory and method*. New York: Oxford University Press.
Russell, J.A. (1979), Affective space is bipolar. *Journal of Personality and Social Psychology*, 37, 345-356.
Ryder, N.B. (1965), The cohort as a concept in the study of social change. *American Sociological Review*, 30, 843-861.
Ryder, N.B. (1973). Comment. *Journal of Political Economy*, 81, S65-S69.
Salmon, W.C. (1984), *Scientific explanation and the causal structure of the world*. Princeton: Princeton University Press.
Sandell, S.H. and D. Shapiro (1978), Theory of human capital and the earnings of women: a reexamination of the evidence. *Journal of Human Resources*, 13, 103-117.
Sandell, S.H. and D. Shapiro (1980), Work expectations, human capital accumulation, and the wages of young women. *Journal of Human Resources*, 15, 335-353.
Sandy, R. (1977), *Two essays in the history of short-run labor supply theory*. PhD-dissertation, Michigan State University, Ann Arbor.
Scanzoni, J.H. (1975), *Sex roles, life styles, and childbearing*. New York: Free Press.
Scanzoni, J.H. (1978), *Sex roles, women's work and navital conflict*. Toronto.
Scanzoni, J.H. (1979), Comments on 'Fertility as consumption: theories from the behavioral sciences'. *Journal of Consumer Research*, 5, 292-293.
Schubnell, H. (1973), *Der Geburtenrückgang in der BRD - Die Entwicklung der Erwerbstätigkeit von Frauen und Müttern*. Stuttgart.
Schultz, T.P. (1976), Determinants of fertility: a micro-economic model of choice. In: A.J. Coale (ed.), *Economic factors in population growth*. New York: Wiley, 89-124.
Schultz, T.P. (1978), The influence of fertility on labor supply of married women: simultaneous equation estimates. In: R. Ehrenky (ed.), *Research in labor economics*. Volume 2. Greenwich: JAI Press, 273-351.
Schultz, T.P. (1981), *Economics of population*. Reading: Addison-Wesley.
Schultz, T.P. and K.I. Wolpin (eds.) (1984), *Research in population economics*. Volume 5. Greenwich: JAI Press.
Schultz, T.W. (ed.) (1974), *Economics of the family: marriage, children and human capital*. Chicago: University of Chicago Press.
Schwarz, K. (1981), Erwerbstätigkeit der Frauen und Kinderzahl. *Zeitschrift für Bevölkerungswissenschaft*, 7, 59-87.
Sen, A. (1973), Behaviour and the concept of preference. *Economica*, 40, 241-259.
Shaw, L.B. (1983), Causes of irregular employment patterns. In: L.B. Shaw (ed.), *Unplanned careers: the working lives of middle-aged women*. Lexington: Lexington Books, 45-59.

Siegers, J.J. (1985), *Arbeidsaanbod en kindertal: een micro-economische analyse*. PhD-thesis, Groningen University.
Siegers, J.J. (1987), Economische verklaringen van het kindertal. In: Kapteyn (ed.), 89-124.
Siegers, J.J. (1990), Towards the construction of interdisciplinary theoretical models to explain demographic behaviour. In: C.A. Hazeu and G.A.B. Frinking (eds.), *Emerging issues in demographic research*. Amsterdam: Elsevier, 181-196.
Simon, H.A. (1978), Rationality as process and product of thought. *American Economic Review*, 68, 1-16.
Simon, H.A. (1979), The meaning of causal ordering. In: R.K. Merton, J.S. Coleman and P.H. Rossi (eds.), *Qualitative and quantitative social research*. London: Free Press, 65-81.
Sinclair, D. (1985), *Human growth after birth*. Fourth edition. Oxford: Oxford University Press.
Skeen, P., L.P. Pauio, B.E. Robinson and J.E. Deal (1989), Mothers working outside of the home: attitudes of fathers and mothers in three cultures. In: E.B. Goldsmith (ed.), *Work and family*. Newbury Park: Sage, 373-382.
Smith, A. (1776/1970), *An inquiry into the nature and causes of the wealth of nations*. London: Aldine Press.
Smith, J.B. and M. Stelcner (1988), Labour supply of married women in Canada, 1980. *Canadian Journal of Economics*, 21, 857-870.
Smith-Lovin, L. and A.R. Tickamyer (1978), Nonrecursive models of labor force participation, fertility behaviour, and sex role attitudes. *American Sociological Review*, 43, 541-557.
Sperber, B.M., M. Fishbein and I. Ajzen (1980), Predicting and understanding women's occupational orientations: factors underlying choice intentions. In: Ajzen and Fishbein (eds.), 113-129.
Spieß, E. (1984), Einstellungen zur Frauenrolle und paarinternen Rollenstruktur. *Problem und Entscheidung*, 26, 65-85.
Spieß, E. (1988), *Frau und Beruf - Der Wandel des Problems in Wissenschaft und Massenmedien*. Frankfurt: Campus.
Spieß, E. *et alii* (1984), Wertwandel und generatives Verhalten - Ergebnisse einer Längsschnittstudie an jungen Ehepaaren. *Zeitschrift für Bevölkerungswissenschaft*, 10, 153-168.
Spitze, G. (1988), Women's employment and family relations: a review. *Journal of Marriage and the Family*, 50, 595-618.
Standing, G. (1978), *Labour force participation and development*. Geneva: International Labour Office.
Stelcner, M. and J. Breslaw (1985), Income taxes and the labor supply of married women in Quebec. *Southern Economic Journal*, 51, 1053-1072.
Stigler, G.J. and G.S. Becker, (1977), De gustibus non est disputandum. *American Economic Review*, 67, 76-90.
Stolzenberg, R.M. and L.J. Waite (1977), Age, fertility expectations and plans for employment. *American Sociological Review*, 42, 769-782.
Strotz, R.H. (1957), The empirical implications of a utility tree. *Econometrica*, 25, 269-280.
Strotz, R.H. (1959), The utility tree: a correction and further appraisal. *Econometrica*, 27, 482-488.
Stutenbäumer-Hübner, A. (1985), Frauen im Beruf - Benachteiligungen mit System. *Mitbestimmung*, 12, 518-575.
Suls, J. and R. Miller (1977), *Social comparison processes*. Washington DC: Hemisphere.
Sweet, J.A. (1973), *Women in the labor force*. New York: Seminar Press.
Tangri, S.S. (1977), Determinants of occupational role innovation among college women. *Journal of Social Issues*, 28, 177-199.

Tazelaar, F. (1980), *Mentale incongruenties - sociale restricties - gedrag: een onderzoek naar beroepsparticipatie van gehuwde vrouwelijke academici*. PhD-dissertation, Utrecht University, Utrecht.
Tazelaar, F. (1983), Van een klassieke attitude-gedragshypothese naar een algemeen gedragstheoretisch model. In: S. Lindenberg and F.N. Stokman (eds.), *Modellen in de sociologie*. Deventer: Van Loghum Slaterus, 112-138.
Tazelaar, F. and M. Sprengers (1985), Een sociaal-structurele en een cognitief-motivationele verklaring van de reacties van werklozen op ontslag. Report, Vakgroep Theoretische Sociologie en Methodenleer, Utrecht University.
Teachman, J.D. and D.A. Heckert (1985), The declining significance of first-birth timing. *Demography*, 22, 185-198.
Tegtmeyer, H. (1976), Die soziale Schichtung der Erwerbstätigen in der BRD. *Zeitschrift für Bevölkerungswissenschaft*, 2, 34-55.
Terhune, K.W. and S. Kaufman (1973), The family size utility function. *Demography*, 10, 599-617.
Thaler, R.H. and H.M. Shefrin (1981), An economic theory of self-control. *Journal of Political Economy*, 89, 392-406.
Thomson, E. (1983), Individual and couple utility of children. *Demography*, 20, 507-518.
Thornton, A. (1978), The relationship between fertility and income, relative income, and subjective well-being. In: J. Simon (ed.), *Research in Population Economics*. Volume 1. Greenwich: JAI Press, 261-290.
Thornton, A. and J. Kim. (1980), Perceived impact of financial considerations on childbearing in the United States. In: J. Simon and J. DaVanzo (eds.), *Research in Population Economics*. Volume 2. Greenwich: JAI Press, 351-363.
Townes, B. *et alii* (1980), Family building: a social psychological study of fertility decisions. *Population and Environment*, 3, 210-220.
Turchi, B.A. (1975), *The demand for children: the economics of fertility in the United States*. Cambridge: Ballinger.
Turchi, B.A. (1979), Fertility as consumption. *Journal of Consumer Research*, 5, 293-296.
Turchi, B.A. (1981), A comprehensive micro theory of fertility. In: W. Molt, H.A. Hartmann and P. Stringer (eds.), *Advances in economic psychology*. Heidelberg: Edition Meyn, 197-210.
Turchi, B.A. (1983), *Estimating the cost of children in the United States*. Final report to the National Institute of Child Health and Human Development. Chapel Hill: Carolina Population Center.
Turchi, B.A. (1984), Rural development policy and fertility: a framework for analysis at the household level. In: W.A. Schutjer and C.S. Stokes (eds.), *Rural development and human fertility in less developed countries*. New York: MacMillan, 97-120.
Turchi, B.A. (1986), *The time cost of American children*. Final Report to the National Institute of Child Health and Human Development. Chapel Hill: Carolina Population Center.
Tversky, A. (1969), Intransitivity of preferences. *Psychological Review*, 76, 31-48.
Tversky, A. (1972), Elimination by aspects: a theory of choice. *Psychological Review*, 79, 281-299.
Udry, J.R. (1982), The effect of normative pressures on fertility. *Population and Environment*, 5, 109-122.
Ullman-Margalit, E. (1977), *The emergence of norms*, Oxford: Oxford University Press.
United Nations (1983), *Report of the meeting on population, Sofia, 6-12 October 1983*. Doc. nr. ECE/AC.9/2. Geneva: United Nations.
Van Horn, S.H. (1988), *Women, work, and family 1900-1986*. New York: New York University Press.

Van Loo, M.F. and R.P. Bagozzi (1984), Labor force participation and fertility: a social analysis of their antecedents and simultaneity. *Human Relations*, 37, 941-967.
Veenman, J. (1983), Arbeidssociologie in wording. *Beleid en Maatschappij*, 10, 202-211.
Veevers, J.E. (1973), Voluntarily childless wives. *Sociology and Social Research*, 57, 356-366.
Verbon, J. (1988), Activité féminine et structure familiale: quelle dépendance ? *Population*, 43, 103-120.
Vinokur-Kaplan, D. (1977), Family planning decision-making: a comparison and analysis of parents' considerations. *Journal of Comparative Family Studies*, 8, 79-98.
Vinokur-Kaplan, D. (1978), To have or not to have another child: family planning attitudes, intentions and behavior. *Journal of Applied Social Psychology*, 8, 29-46.
van Vonderen, M. (1987), *Werken, moeder worden en carrière maken*. Maastricht: Van Gorcum.
de Vries, N.K. (1988), *Gelijkheid en complementariteit*. PhD-dissertation, Groningen University.
Waite, L.J., G.W. Haggstrom and D.E. Kanouse (1984), The effect of the first birth on the nature and extent of women's and men's employment. Paper presented at the PAA Annual Meeting 1984.
Waite, L.J. and R.M. Stolzenberg (1976), Intended childbearing and labor force participation of young women: insights from nonrecursive models. *American Sociological Review*, 41, 235-252.
Wales, T.J. and A.D. Woodland (1980), Sample selectivity and the estimation of labor supply functions. *International Economic Review*, 21, 437-468.
Warshaw, P.R., B.H. Sheppard and J. Hartwick (forthcoming), The intention and self-prediction of goals and behaviour. In: R.P. Bagozzi (ed.), *Advances in marketing communication research*. Greenwich: JAI Press.
Watson, D. and A. Tellegen (1985), Toward a consensual structure of mood. *Psychological Bulletin*, 98, 219-235.
Weber, M. (1958), Class, status, party. In: H.H. Gerth and C.W. Mills (eds.), *From Max Weber*. New York: Galaxy, 180-195.
von Weizsäcker, C.C. (1984), The influence of property rights on tastes. *Journal of Institutional and Theoretical Economics* (ZgS), 140, 90-95.
Werner, P.D., S.E. Middlestadt-Carter and T.J. Crawford (1975), Having a third child. Predicting behavioral intentions. *Journal of Marriage and the Family*, 37, 348-358.
Westoff, C.F., R.G. Potter Jr., P.C. Sagi and E.G. Michler (1961), *Family growth in metropolitan America*. Princeton: Princeton University Press.
Westoff, C.F. and N.B. Ryder (1977), The predictive validity of reproductive intentions. *Demography*, 14, 431-453.
Wilbrink-Griffioen, D., A. Elzinga and I. van Vliet (1988), Kinderopvang en arbeidsparticipatie van vrouwen. In: R.J. van Amstel, E. Slot and V.C. Vrooland (eds.), *Een kind krijgen en blijven werken*. Amsterdam: Nederlands Instituut voor Arbeidsomstandigheden, 129-146.
Willekens, F. (1988), A life course perspective on household dynamics. In: N. Keilman, A. Kuijsten and A. Vossen (eds.), *Modelling household formation and dissolution*. Oxford: Clarendon Press, 87-107.
Williams, R.M. (1975), Relative deprivation. In: L. Coser (ed.), *The idea of social structure*, New York: Harcourt Brace Jovanovich.
Willis, R.J. (1973), A new approach to the economic theory of fertility. *Journal of Political Economy*, 81, S14-S69.
Willis, R.J. (1974), A new approach to the economic theory of fertility behavior. In: T.W. Schultz (ed.), 25-75.

Willis, R.J. (1987), What have we learned from the economics of the family ? *American Economic Review Papers and Proceedings*, 77, 68-81.
Witt, U. (1987), Familienökonomie - Einige nicht-neoklassische Aspekte. In: H. Todt (ed.), *Die Familie Gegenstand sozialwissenschaftlicher Forschung*. Berlin: Duncker und Humblot, 63-84.
Wright, P.L. (1974), The harassed decision maker: time pressures, distractions, and the use of evidence. *Journal of Applied Psychology*, 59, 555-561.
Wright, P.L. and F. Barbour (1977), Phased decision strategies: sequels to an initial screening. In: M.K. Starr and M. Zeleny (eds.), *Multiple criteria decision making*. Amsterdam: North Holland, 91-109.
Yamagishi, T. (1986), The provision of a sanctioning system as a public good. *Journal of Personality and Social Psychology*, 51, 110-116.
Zellner, H. (1975), The determinants of occupational segregation. In: C. Lloyd (ed.), *Sex, discrimination, and the division of labor*. New York: Columbia University Press, 125-145.
Zerubavel, E. (1981), *Hidden rhythms: schedules and calendars in social life*. Berkeley: University of California Press.
Zimmermann, K.F. (1985), *Familienökonomie: theoretische und empirische Untersuchungen zur Frauenerwerbstätigkeit und Geburtenentwicklung*. Berlin: Springer-Verlag.
Zimmermann, K.F. (1986), Effiziente Allokation des Familienbudgets. In: K.F. Zimmermann (ed.), *Demographische Probleme der Haushaltsökonomie*. Bochum: Brockmeyer, 126-140.
Zimmermann, K.F. (1987), The variety of goods and fertility decline. Mimeo, University of Pennsylvania, Philadelphia.
Zimmermann, K.F. (1988), *Wurzeln der modernen ökonomischen Bevölkerungstheorie in der deutschen Forschung um 1900*. Jahrbücher für Nationalökonomie und Statistik, 205, 116-130.
Zimmermann, K.F. (1989a), Optimum population: an introduction. In: K.F. Zimmermann (ed.), *Economic theory of optimal population*. Heidelberg: Springer-Verlag, 1-8.
Zimmermann, K.F. (1989b), Die Konkurrenz der Genüsse: ein Brentano-Modell des Geburtenrückgangs. *Zeitschrift für Wirtschafts- und Sozialwissenschaften*, 109, 467-483.
Zimmermann, K.F. and J. De New (1990), Labor market restrictions and the role of preferences in family economics. Discussion Paper, University of Munich.