

DISTRIBUTION OF ECONOMIC RESOURCES: IMPLICATIONS OF INCLUDING HOUSEHOLD PRODUCTION

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The value of household production is estimated to 40–50 percent of GNP in most western countries, and because the distribution of this income-in-kind is different from ordinary income distribution, the concept of economic well-being may include household production. The monetary value of household production is evaluated by a market alternative principle and an opportunity-cost principle. In the last case a reservation wage is estimated, and integrated in a modified opportunity principle, which means that household work of non-working women is evaluated by the reservation wage, and household work of working women and men by their wage-rate. The conclusions are among others, that the inclusion of household production reduces the inequality, and that the women's contributions—money income and household production—functions as income equalizers.

The aim of estimating the value of economic resources is to give a picture of the economic welfare in the population. In most research work (e.g. Ringen, 1986 and 1991) the focus is on monetary incomes, and therefore the value of household production is among others excluded.¹ For that reason, not all goods and services, which are available for consumption, are counted, and we do not have a complete description of the economic welfare, i.e. the potential consumption given actual income and income-in-kind.

The problem of excluding the value of household production is serious since it amounts to 40–50 percent the GNP in most West European countries and in the U.S., see Bonke (1986 and 1987). Comparing the welfare between different groups in the population in the same country as well as between different countries worsens the problem, and so do comparisons of the distribution of economic welfare in various periods. In addition, the focus on monetary income leaves out the great contribution by women in the household.

In this article estimated monetary values of household production will be added to monetary income, gross and net of taxes, to elucidate the distribution of economic welfare. The value of public services-in-kind—health care, social services, day-care, etc.—are excluded, which certainly influence inequality (Hansen, 1985), and so is direct utility of time (Hawrylyshyn, 1977).

Finally the aim of the article is to examine the distribution of resources during one year—a cross-sectional analysis, and not the life-cycle incomes—longitudinal analyses or the earnings capacity, which Garfinkel and Haveman

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¹In general, income by illegal work, fringe benefits, capital gains and losses, indirect subsidies to the dwelling market, etc. are also excluded in this kind of research work.

(1977) estimates as the income by 50 weeks full-time work a year. We therefore ignore the possibility of earning an income, which is bigger than the virtual income, and by that we also ignore, to what extent differences in income represent different preferences between working time and leisure time. In other words the estimated inequalities in this article do not reflect proportional involuntary differences in economic resources.

MEASURING INEQUALITY

According to the usual practice the distribution of economic resources is illustrated by dividing the households according to increase of income. The inequality is then the difference between the share of the total income masses for a certain group and the share this group justifies if there was equality. Full equality is expressed by a Gini-coefficient (Gini-ratio*0.01)—weighed by a lower Gini-coefficient (G_L) and an upper Gini-coefficient (G_U) in relation 1:2 (Cowell, 1977, pp. 121 and 129)—to the value of 0, as the value of 1 expresses the maximal inequality.

The variance of the logarithm of income is another measure of inequality, which transform a left-side income distribution to an anticipated normal distribution. This measurement is easy to interpret, and at the same time makes it possible to decompose an inequality within *and* inequality between demographic and socio-economic groups.

The two measurements have in common the possibility of multiplying all incomes by a constant factor without affecting the amount of inequality. The difference between the measurements are among others the consequences of changes in the distribution. Where the Gini-coefficient is more affected by changes in the middle of the distribution than in the ends, the variance of the logarithm is most affected by changes in the lower part of the distribution. However if the distribution of income expressed by Lorenz-curves do not intersect, both measurements will rank different distributions in the same way.

On the other hand intercepting Lorenz-curves means, that different Gini-coefficients or different variances of the logarithm only expresses similar differences in inequality, if the inequality on all income levels ascribe to the same value. Weighing differences between low-income groups higher than differences between high-income groups can “outweigh” the differences in Gini-coefficients and variances, respectively, cf. Atkinson (1983, p. 56) “... the degree of inequality cannot, in general, be measured without introducing social judgements.”²

In most comparisons of income in different households it is assumed, that the members of the household pool their incomes and share them to get the same level of welfare (Danziger and Taussig, 1979). However, pooling the incomes do not imply that all members should attribute with the same weight. If, for example

²Atkinson draws up an “equally distributed equivalent measure,” where the attitude to inequality in the income distribution is entered explicitly as the parameter, ϵ . In this way the aversion against inequality varies, and Atkinson (1980, p. 63) finds potential gains by doing redistributions ensuring equality. Comparing rank using the Gini-coefficient and variance to the logarithm respectively, Atkinson argues, that the first is equal to a low aversion, and the second to a relative high aversion against inequality.

the purpose of the estimation of inequality is to measure the distribution of economic welfare, economies of scale and different needs tell us to correct for differences in the number of members in households.³

Many studies apply equivalency scales to correct for differences in the composition and the size of the households (see the review in Atkinson, 1983, p. 49 and Homan 1988), while other studies estimate the distribution of income per capita.⁴

Finally one has to mention, that different kinds of income do not necessarily mean the same for the welfare. There may be some restraints in labor supply making the preferred allocation of time impossible and thereby the income composition not the most desirable. In addition, public transfers are not always considered to be of the same value as other kinds of income. Therefore, the same inequality in different kinds of income are not equal to corresponding inequalities in welfare.

THEORY OF INCOME DISTRIBUTION

The consequences of women's labor income on income distribution are very difficult to predict, and so are the consequences of including the monetary value of household production in the distribution of economic resources.

It is likely, that women with "low-income" spouses as well as women with "high-income" spouses have a relatively high labor market frequency and labor supply. For the first group because of the need of income, and for the second because of high wage-rates following their more pronounced investments in human capital. At the same time we know, that highly educated women ordinarily are married to similar men, which because of wage discrimination in the labor market (Smith, 1989) modifies the labor supply by these women. High wage rates for men provide a high permanent income in the family.

In other words, whether the inclusion of income earned by women enlarges or diminishes the inequality in economic resources is partly a question of the weighing of two groups, i.e. the employment rates of low income families compared to high income families, and partly a question of the differences in wage-rates between the husband and the wife. And none of these questions can be answered in advance.

We find the same kind of problems in predicting the effect on the distribution of economic resources by including the monetary value of household production. Labor supply by women means reductions in household work, and if this substitution is the same for women married to high-income men as well as for women married to low-income men, and the household work is evaluated by an "opportunity-cost principle," which means shadow prices equaling the individual wage-

³This doesn't ensure that the income is distributed in the same way among the members in the household. Apart from this kind of inequality, the allocation can become non-optimal compared to differences in preferences.

⁴Homan uses a direct measurement method based on the cost functions in the households, where "The household is presented with a set of verbal stimuli of some situations of well-being. The answers, in monetary terms, are the minimal costs associated with the offered welfare levels." (See p. 97.)

rates, the distribution effects are the same as including the labor income of women, as mentioned above.

However, estimating the household work by a market alternative principle, market alternative housekeeper costs (Hawrylyshyn, 1977), where the work is evaluated at the same price independently of the household-work wage-rate, the inequality in economic resources is anticipated to diminish, when including the monetary value of the household production. The same could be expected if an direct output approach was operated, i.e. finding the price of market substitutes for household tasks, thus Fitzgerald and Wicks (1990, p. 135) results suggest, that household production "constitutes a disproportionate share of total resources for low income households."⁵

DISTRIBUTION OF ECONOMIC RESOURCES AND TAXATION

There is an essential difference between income earned on the labor market and household production because of the fact, that only the first type of income is taxed. From a welfare perspective it would appear reasonable to tax all kinds of income, because a tax-free household production "... leads to unequal treatment of people in essentially equal positions" (Musgrave, 1959, see Leuthold, 1981). In the same way, progressive taxation of labor income means different values of household production depending on the level of monetary income. Some practical problems explain why household production is not taxed.

First, household production is not registered, and is difficult to separate from non-productive leisure activities. Secondly, household production is income-in-kind and by that one cannot pay tax in cash, but only in time—civil service. Therefore, if one should pay tax on this income the labor supply would have to be raised, which would reduce household production (Ferber and Birnbaum, 1980).

Leuthold (1981) mentions, that the possibility of tax reductions, such as subsidies, when other people take care of one's children while working on the labor market, in reality is the same as taxation of household production. Such an arrangement economically equalizes the conditions of households taking care of their own children and households bringing their children to day care institutions.

In the following section, the monetary value of household production is estimated gross as well as net of taxes, i.e. disposable incomes.

PROCEDURES

The data in the following empirical work are derived from the Time Use Survey for the year 1987 (The Danish Institute of Social Research), which is a simple random sample of about 5,000 individual adult Danish people aged 16 to 76, containing demographic and socioeconomic information on the current work behavior on the labor market for all spouses, i.e. the amount of hours including overtime and hours in supplementary jobs in a normal working week.

⁵For a survey of methods measuring household activities, see Chadeau (1985).

In a time-diary the respondents recorded the main activity of every quarter of each hour, which is the background information for accounting the daily time-use of household activities in February, which was the month chosen for that part of the survey.

Due to lack of economic information in the time-use survey, the amount of labor income, capital income, public transfers, taxes, unemployment benefits, etc. for the year 1987 are taken out of the register of income taxation (Danmarks Statistik) for the respondents in the time-use survey.

Besides the sample selection bias caused by the fact that individual persons are respondents and not the households, which are the units of analysis in this study, some information concerns only the respondent. This applies the household work for spouses to respondent men, T_{hwsp} , as well as spouses to respondent women, T_{hmsp} , which is therefore predicted by the formulas,

$$(1) \quad T_{hwsp} = \mu_{0w} + \mu_w Y + \varepsilon_w,$$

$$(2) \quad T_{hmsp} = \mu_{0m} + \mu_m Y + \varepsilon_m,$$

where Y is a vector of parameters, determining the productivity in the household production, and $\hat{\mu}_{0w}$, $\hat{\mu}_{0m}$, $\hat{\mu}_w$ and $\hat{\mu}_m$ are the estimated coefficients for the constant term and variables in models of the respondents labor supply (Bonke, 1992).

Another problem is that of measuring the opportunity costs of time for non-employed married wives—respondents and non-respondents. Nearly all men are working in the labor market, and the unemployed are excluded in order to avoid too many estimation complications. Both single men and women are excluded because of structural differences in the parameters faced by these households in the labor market (Bryant and Zick, 1985). For employed men and women the wage-rate is their opportunity cost of time, among others assuming the marginal productivity in household work equals the productivity in employment. Since non-employed wives have no wage-rate, their household work is valued by a “reservation wage,” which is a function of their preferences, their productivity in household production and the prices and amount of other relevant resources for that production. By a two-step procedure the probability of participation is estimated at first, and then a wage-rate⁶ function and a weekly hours supply function are estimated on the sub-sample of participants, including a correction factor, λ , for self-selectivity, see Heckman (1979). Finally the application of the Hanoch-estimation method for estimating reservation wages (Hanoch, 1980) results in wage-rates for non-employed and employed wives, see Table 1, which shows that the reservation wage is on average 50 percent higher than the predicted wage-offer for non-employed women, and opposite for employed women, for whom the reservation wage is on average nearly half the size of the wage rate. These findings are in accordance to Hanoch’s confirming the theory

⁶The definition of the wage-rate is total labor income in 1987 divided by reported working hours in a normal week (“How many hours do you normally work in your ordinary job in a week?”) that year, including hours of overtime and hours in supplementary jobs, multiplied by the number of working weeks for a full-time worker. For people involuntarily unemployed—getting unemployment insurance benefits—in a shorter or longer period in 1987, the number of working hours is reduced by the total benefits divided by the maximum benefit per hour.

TABLE 1
WAGE-RATES AND RESERVATION WAGES FOR NON-EMPLOYED AND
EMPLOYED WIVES
(Couples in DK)

	Non-employed DK-kroner	Employed
Wage rate/shadow wage rate (estimated)	92.67	87.59
Reservation wage rate	138.16	45.36
Wage rate of prof. housekeeper	76.00	76.00

Source: Bonke, 1992.

saying, that the argument for not working in the labor market is a marginal value of home time larger than the marginal wage offer and a marginal wage rate net of taxes exceeding the marginal value of home time for working people, respectively.

The estimated coefficients in the estimation of the reservation wage rate are used in predictions of the reservation wage rate for non-employed women, respondents or spouses, where the husband is the respondent.

By this procedure the monetary value of household work for the whole sample is computed by the formula:

$$(3) \quad HHW = (S * T_{hm} + (1 - S) * T_{hm}) W_m + S * ((I * W_w + (1 - I) * W_w^*) T_{hwsp}) \\ + (1 - S) * ((I * W_w + (1 - I) * W_w^*) T_{hw}),$$

here I is 0, if the wife is non-employed, and else 1. S is 0, when respondents, and 1, if the spouse is not a respondent. W_m , W_w are wage rates of men and women and W_w^* reservation wage rate of women, and T_{hm} , T_{hwsp} , T_{hm} and T_{hw} the estimated and the registered household working time by men and women, respectively. In this way we apply a *modified opportunity cost method* (Homan, 1988).

Multiplying the working time by the wage rate for housekeepers instead of using the opportunity cost of time, one uses a market alternative housekeeper cost method (MAHC).

MEAN VALUES OF INCOME COMPONENTS

Table 2 shows the size of the income components, and the labor market income appears to constitute the largest part of the total gross income, namely 54 percent. By making a comparison, the household work is estimated to be 38 percent, and the capital income and the public transfers to be 3 percent and 5 percent respectively. Considering that monetary income is taxable, the consumption value is reduced to amount to a little less than the monetary value of household production, which is not taxable. In other words the household work enlarges the access to goods and services as much as working in the labor market. Leuthold (1981) 1975-figures, and Bryant and Zick (1985) have had the same results for the U.S., hence women there contribute much less to the households

TABLE 2
MEAN INCOME BY VARIOUS KINDS OF INCOME-COMPONENTS
(Couples in DK, U.S. and NL)

	Before Taxes			After Taxes ¹			
	DK					U.S. ³	NL ⁴
	(N)	1000 DK-kr.	Index	1000 DK-kr.	Index	Index	Index
Income-components:							
Y_0	(1346)	16.044	3	10.983	2	}	4
Y_{tr}	(1345)	27.856	5	19.885	4		
$T_{im} * W_m$	(1346)	198.464	35	130.848	30		
$T_{iw} * W_w$	(1345)	104.462	19	69.198	16	9	9
$T_{hw} * W_w^2$	(1052)	115.609	21	115.609	26	42	40 ⁵
$T_{hm} * W_m^2$	(1202)	95.719	17	95.719	22	7	
			100		100	100	100
Total	(969)	590.548	.	463.483	.	.	.

¹The capital income, Y_0 , the labor income, $T_1 * W$, and public transfers, Y_{tr} , are multiplied by the average tax rate for that respondent.

²The average income estimated by the MAHC-principle amounts to 93.673 kr. and 61.066 kr. for Danish wives and husbands, respectively.

³Urban households 1979-80, Bryant and Zick (1985).

⁴Households 1983, Homan (1988).

⁵Corrected for family size, here converted into figures comparable to the other income components.

monetary income. In the Netherlands the women's monetary income is relatively small, and so is the household work compared to the U.S. and DK, see Table 2.

In DK, U.S. and NL mostly men contribute monetary income, and wives contribute household work. The last condition means that the lower opportunity cost of time by women compared to men is more or less outweighed by relatively more time in household production used by women. In distribution of the momentary value of all work—in the household and in the labor market—between the sexes, the husband in DK contributes more than the wife, and this is independent of whether we compare gross income or income net of taxes. In both cases men provide 52 percent of the consumption level against 40-42 percent by women.

THE DISTRIBUTION OF ECONOMIC RESOURCES

The inequality of distribution of monetary income is calculated to a Gini-ratio of 17.8 compared to only 16.1 for total income, including household production. However the total income *after* taxes are more unequally distributed than the same monetary income, but the difference is small, and the corresponding Lorenz-curves intersect. The same pattern seems to hold for the U.S., see Table 3.

Substituting the Gini-ratio by the variance to the logarithm as a measure of inequality, a more equal distribution of economic resources appears by including the monetary value of household production, see the variance of 0.103 and 0.089 for net-income, respectively including and excluding the monetary value of

TABLE 3
 DISTRIBUTION OF INCOME, BEFORE AND AFTER TAX, AND INCOME INCLUDING
 HOUSEHOLD WORK
 (Couples in DK and U.S.)

	DK		U.S. ³	
	Before Tax	After Tax	Before Tax	After Tax
Income components:		Gini-ratio ¹		
$Y_0 + (T_{im} * W_m) + (T_{iw} * W_w)$ + Y_{ir}	17.8 (17.4-18.0)	16.4 ² (16.1-16.6)	31	25
$Y_0 + (T_{im} * W_m) + (T_{iw} * W_w)$ + Y_{ir} + $(T_{hw} * W_w) + (T_{hm} * W_m)$	16.1 (15.8-16.3)	16.9 ² (16.6-17.1)	26	24

¹Gini-ratios are estimated on the basis of income components classified in decile. For every income component there is a new distribution.

²Lorenz-curves intersect.

³Urban households 1979-80, Bryant and Zick (1985).

household work in Table 5. This has to be seen in connection with the difference between the two methods, where the variance to logarithm is more sensitive to changes in the lower part of the distribution. The obtaining of less inequality by including household work in economic resources, which is the consequence of using the method of variance to logarithm, seems to confirm Homan (1988), see Table 5, and Sirageldin (1969), showing that low-income groups compensate by a relatively large household production.

Substituting the WOCT-principle by the MACH-principle, where every working hour in household production has the same value independently of the opportunity cost of time, the effect by including the household work is of course more equality, see the variance to logarithm of income, in Table 6, declining from 0.081 to 0.068.

WOMEN'S AND MEN'S CONTRIBUTION TO ECONOMIC INEQUALITY

The consequences for the distribution of economic resources of adding monetary income earned by the wife to the monetary income earned by the husband, plus the household's capital income, is a reduction in the inequality of gross income as well as in net-income, see Table 4. This confirms the findings of Danziger (1980) that (white) wives' earnings have a small equalizing impact on the distribution of family incomes.

If we then add the monetary value of the husband's household work to total labor market income there is a decline in inequality in gross incomes, while the inequality in net income increases. However in both cases the Lorenz-curves intersect. Adding the monetary value of the wives' household work to total labor market income causes, on the other hand, a pronounced decrease in the inequality—Gini-ratios decline respectively from 21.8 to 17.1, and from 20.7 to 17.3 for income before and after tax. Based on Bryant and Zick (1985, p. 1104),

TABLE 4
DISTRIBUTION OF INCOME COMPONENTS, BEFORE AND AFTER TAX, BY WOMEN AND MEN
(Couples in DK and U.S.)

	DK		U.S. ⁶	
	Before Tax	After Tax	Before Tax	After Tax
Income components:		Gini-ratio ¹		
$Y_0 + (T_{lm} * W_m)$	23.37 (22.8-23.5)	22.1 (21.7-22.4)	34 ⁷	29 ⁷
$Y_0 + (T_{lm} * W_m) + (T_{lw} * W_w)$	21.8 ² (21.4-22.0)	20.7 ⁴ (20.3-20.8)	31 ⁷	25 ⁷
$Y_0 + (T_{lm} * W_m) + (T_{lw} * W_w) + (T_{hm} * W_m)$	20.5 ² (20.1-20.7)	21.1 ⁴ (20.7-21.3)	30 ⁷	24 ⁷
$Y_0 + (T_{lm} * W_m) + (T_{lw} * W_w) + (T_{hw} * W_w)$	17.1 ³ (16.7-17.2)	17.3 ⁵ (16.9-17.4)	26 ⁷	25 ⁷
$Y_0 + (T_{lm} * W_m) + (T_{lw} * W_w) + (T_{hw} * W_w) + (T_{hm} * W_m)$	16.7 ³ (16.3-16.8)	17.3 ⁵ (17.0-17.5)	26 ⁷	24 ⁷

¹See note in Table 3.

^{2,3,4,5}Lorenz-curves intersect.

⁶Urban households 1979-80, Bryant and Zick (1985).

⁷Inclusive Y_{lr} .

whose findings are similar for the before tax income, see Table 4, we conclude, that "... the market earnings and household production activities of the wives are significant income distribution equalizers."

Another way of studying the effect of allocation of time by women is to compare the distribution within and between households, in which the wives have different employment levels.

In the first place the monetary value of household work is nearly the same for families with part-time working wives as for families with full-time working wives. For these two-earner families the household work amounts to two-thirds of the household work in one-earner families. Homan (1988, pp. 170-171) finds similar proportions in Holland.

Secondly the main part of the inequality in the distribution of monetary income and total income—measured by the variance to logarithm of income—is *within* household groups of non-employed, part-time working and full-time working wives. 89 percent of the inequality in monetary income is explained in this way, against 99 percent for the total income, see Table 5. The lack of explanation for the inequality in economic resources by the employment level of women therefore implies that other socioeconomic determinants are of importance.

Comparing the inequalities in total income within the groups implies a diminishing inequality with increasing working hours in the labor market for the wife. In this connection the monetary value of household production reduces the inequality within households, where the wife is respectively non-employed and

TABLE 5
INEQUALITY IN INCOME AND INCOME INCLUDING HOUSEHOLD WORK: HOUSEHOLDS WITH
DIFFERENT EMPLOYMENT RATES IN DK AND NL

	DK				NL ³
	Mean Income	Variance to Log of Net-income	Contribution to Total Inequality		Variance to Log of Net-income
			Absolute	%	
Couples			Monetary income ¹		
Husband employed, wife non- employed	173,096	0.143	0.027	26	0.085/0.073 ⁴
Husband employed, wife part- time empl.	228,411	0.071	0.024	23	
Husband employed, wife full- time empl.	238,018	0.088	0.041	40	0.066/0.073 ⁴
Inequality within groups	—	—	0.092	89	—
Inequality between groups	—	—	0.011	11	—
Total	220,092	0.103	0.103	100	0.097/0.099 ⁴
Couples			Total income ²		
Husband employed, wife non- employed	470,852	0.120	0.010	11	0.047 ⁴
Husband employed, wife part- time empl.	439,811	0.097	0.039	44	
Husband employed, wife full- time empl.	440,824	0.077	0.039	44	0.038 ⁴
Inequality within groups	—	—	0.088	99	—
Inequality between groups	—	—	0.001	1	—
Total	442,723	0.089	0.089	100	0.043 ⁴

¹ $Y_0 + (T_{im} * W_m) + Y_{ir} + (T_{iw} * W_w)$.

² $Y_0 + (T_{im} * W_m) + Y_{ir} + (T_{iw} * W_w) + (T_{hw} * W_w) + (T_{hm} * W_m)$.

³ Households 1983, Homan (1988).

⁴ Corrected for family size.

full-time working. Within households where the wives are part-time workers, the inclusion of household work increases the inequality, which may be due to higher substitution between household work and work in the labor market for money-poor households compared to money-rich households according to different preferences for household work. However, this does not counter-balance the effect of the other groups. In this way, including the monetary value of household work reduces the inequality for the whole sample—the variance to logarithm of income is 0.103 and 0.089. A trend of more employed women, working more hours, from part-time to full-time, which is in progress in Denmark and elsewhere, may *ceteris paribus* diminish the inequality in the distribution of economic resources in the future.

INEQUALITY IN THE LIFE-CYCLE

Since only couples enter this study, the problem of using the household and not the individual is limited to a question of the weight of children. Instead of

adjusting by equivalency scales, the consequences of an unequal distribution of households with children are illustrated by the part of the inequality in different income components, which can be explained as the inequality *between* four life-cycle groups.

Nearly 10 percent of the total inequality in monetary income net of tax as well as in total income is explained as inequality between the four groups, and the last 90 percent as inequality within these groups (Bonke, 1992). In this way the omission of equivalency scales seems to be of limited importance for the size of inequality in economic resources comparing couples, where at least the husband is working in the labor market.

Moreover, we find that the inequality between the groups explains 5 percent applying the WOCT-principle on total gross income, against 7 percent applying the MACH-principle. Within the groups the last principle implies the smallest inequality, except for young couples without children, where the WOCT-principle results in the smallest inequality, see Table 6.

Finally comparing the monetary income net of tax and the total income net of tax means that household production diminishes the inequality within young couples without children and couples with preschool children, 0-6 year old, while it increases the inequality within couples with school-children and older couples without children. Since the effect is greater within the first groups than within the last ones, the total inequality in economic resources diminishes when the monetary value of household work is included (Bonke, 1992).

TABLE 6
INEQUALITY IN INCOME INCLUDING THE HOUSEHOLD WORK, COMPUTED BY
DIFFERENT-PRINCIPLES: HOUSEHOLDS AT DIFFERENT LIFE-CYCLE STAGES IN DK

	WOCT-Principle		MAHC-Principle	
	Variance to log of net-income	Contribution to total inequality (%)	Variance to log of net-income	Contribution to total inequality (%)
Couples				
Couples, no children, wife <45 year	0.091	20	0.098	28
Couples, children, youngest child 0-6	0.057	22	0.051	24
youngest child 7-16	0.082	37	0.059	29
Couples, no children, wife >44 year	0.089	16	0.050	12
Inequality within groups	—	95	—	93
Inequality between groups	—	5	—	7
Total	0.081	100	0.068	100

¹WOCT-principle: $Y_0 + (T_{lm} * W_m) + Y_{ir} + (T_{lw} * W_w) + (T_{hw} * W_w) + (T_{hm} * W_m)$, and MAHC-principle: $Y_0 + (T_{lm} * W_m) + Y_{ir} + (T_{lw} * W_w) + (T_{hw} * W_w) + (T_{hm} * W_m)$.

CONCLUSION

In studies of economic inequality in the population one has to include household work. The argument is, as this paper tells us, that household work is comprehensive and that the distribution of household work is not equal to the distribution of monetary income.

First we find that the household work gives more access to goods and services than does monetary income net of taxes, and that women to a higher degree than men contribute with this type of income-in-kind.

Secondly, the distribution becomes less unequal by including the monetary value of household production in economic resources, and this is due to women's work. Adding the household work done by women as well as their money income earned on the labor market, means that women function as income equalizers.

The effect of women's time-allocation is of importance for the distribution of monetary income, while it does not matter for the inequality in total income, including household work. The whole inequality is found within households belonging to groups, where the women's employment rate and working hours differ. This is the third finding.

Finally the paper calculates the part of the inequality caused by the fact that households are in different stages in the life-cycle. Nearly 10 percent is explained as inequality between four life-cycle groups, which give an idea of the amount of the equivalency problem. Most of the inequality is inequality within young households with or without children, and older ones, where the group of young households with small children has the smallest inequality in total income net of taxes, contrary to the widespread opinion in the public debate.

Still, this type of research does not tell us about the preferences for time-allocation and allocation of money respectively. At the same time a comparison of the estimated opportunity cost of time to self-reported time values would increase the reliability of the results. In general we have to know much more about the distribution of economic resources including household production.

REFERENCES

- Atkinson, A. B., *The Economics of Inequality*, Second Edition, Clarendon Press, Oxford, 1983.
- , On the Measurement of Inequality, Atkinson, A. B. (ed.), *Wealth, Income and Inequality*, Selected Readings, Penguin Education, London, 1980.
- Bonke, J., Husholdningsøkonomi en teoretisk og empirisk belysning af husholdningsproduktionen, Memo 157, Økonomisk institut, Københavns Universitet, 1986.
- , Husholdningernes økonomi, *Nationaløkonomisk Tidsskrift*, 125 (2), 1987.
- , Faktotum—household production, Copenhagen, Forthcoming, 1992.
- Bryant, W. K. and Zick, C. D., Income Distribution Implications of Rural Household Production, *American Journal of Agricultural Economics*, 67 (5), 1100–1104, 1985.
- Chadeau, A., Measuring Household Activities: Some International Comparisons, *The Review of Income and Wealth*, 31, (3), 1985.
- Cowell, F. A., *Measuring Inequality*, Philip Allan Publishers, Oxford, 1977.
- Danziger, S., Do Working Wives Increase Family Income Inequality? *The Journal of Human Resources*, pp. 444–51, XV 3, 1980.
- Danziger, S. and Taussig, The Income Unit and the Anatomy of the Income Distribution, *The Review of Income and Wealth*, 25 3, 365–375, 1979.
- Ferber, M. A. and Birnbaum, B., One Job or Two Jobs: The Implications for Young Wives, *Journal for Consumer Research*, 7, 1980.

- Fitzgerald, J. and Wicks, J., Measuring the Value of Household Output: A Comparison of Direct and Indirect Approaches, *The Review of Income and Wealth*, 36 (2), 1990.
- Garfinkel, I. and Haveman, R., Earnings Capacity, Economic Status, and Poverty, *The Journal of Human Resources*, XII, (1), 49-70, 1977.
- Hanoch, G., A Multivariate Model of Labor Supply, in Smith, J. P. (ed.), *Female Labor Supply: Theory and Estimation*, Princeton University Press, Princeton, NJ, 1980.
- Hansen, F. K., Fordelingspolitikken og dens virkninger, Socialforskningsinstituttet, Publ. 137, København, 1985.
- Hawrylyshyn, O., Towards a Definition of Non-Market Activities, *The Review of Income and Wealth*, 23, 1977.
- Heckman, J. J., Sample Selection Bias as a Specification Error, *Econometrica*, 47 (1), 1979.
- Homan, M. E., *The Allocation of Time and Money in One-Earner and Two-earner Families; an Economic Analysis*, Offsetdrukkerij Kanters Alblasterdam, 1988.
- Leuthold, J. H., Taxation and the Value of Non-market Time, *Social Science Research* 10, 267-281, 1981.
- Ringén, S., *Difference and Similarity*, Institute for social forskning, Stockholm, 1986.
- , Households, Standard of Living, and Inequality, *The Review of Income and Wealth*, 37 (1), 1991.
- Sirageldin, I., Non-Market Component of National Income, Survey Research Centre, Institute for Social Research, University of Michigan, University of Michigan Press, Ann Arbor, 1969.
- Smith, N., Wage Discrimination in the Danish Labour Market? Working Paper 89-7, Labour Economics Group, University of Aarhus and Aarhus School of Business, 1989.