



Value of housework time and changes in traditional economic well-being in Finland in 1979-2000

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Abstract

The paper looks at the change, the level and the structure of income distribution and distribution of consumption possibilities at the individual and at the household level between the years 1979 and 2000. I also pay attention to the development of low incomes when the concept of income is expanded to include a monetary measurement of household production. The paper uses Time Use Data, collected by Statistics Finland in 1979, 1987-1988 and 1999-2000. I find that consumption possibilities are more equally distributed than money income. Household production increases the consumption possibilities of all income groups but its effect is most significant in the low income decile groups. As a share of consumption possibilities, household production forms a significantly more important part for low income households than for high income households. By looking at consumption possibilities we can see a different distribution of economic well-being compared to distribution offered by money income measurement alone.

JEL-Codes: D1, D3, D6, I3

Keywords: Value of housework time, consumption possibilities, economic well-being, inequality, poverty

1 Introduction

The Finnish economy was growing and economic well-being increased steadily for all population sub-groups until the end of 1980s. However, the economic depression of the early 1990s led to a substantial decline in a household's income. After the depression, income inequality rose rapidly between 1994-2000. At the same time the number of individuals below the low income line increased rather constantly (Table 1). This latest development suggests faster increases in real incomes and larger gains in terms of economic well-being in high income decile groups compared to low income decile groups (Aaberge et al., 2000; Riihelä et al., 2001; Mattila-Wiro, 2006).

The inequality and poverty measures drawn to describe the economic development and development of well-being in Finland are based primarily on observed money income alone. The applied measures do not fully depict the large changes in population structure, in household composition and in patterns of labor force participation, especially the fast increase in unemployment Finland has experienced since the end of the 1970s. It follows that the figures based only on money income may over- or understate changes in the distribution of economic resources and the economic well-being of individuals and households.

Valuing the time spent on productive household activities – using shadow and/or market prices – and adding this value to money income allows us to examine the distribution of *consumption possibilities*. This is particularly useful when examining changes in the distribution of economic well-being over time, since household production can adjust the level of well-being when income fluctuates. This means that changes in the distribution of income may show changes in well-being that are not observed if the development of household production is included in the analysis¹.

The paper looks at the change, the level and structure of income distribution and distribution of consumption possibilities at individual and at household level as well as in various sub-groups between years 1979 and 2000. Another interest is to look at the changes in low incomes when the concept of income is expanded to include a monetary measurement of household production. I anticipate that by looking at consumption possibilities we can see a different distribution of economic well-being compared to distribution offered by money income measurement alone. The paper uses Time Use Data, collected by Statistics Finland in 1979, 1987-1988 and 1999-2000. The analysis is carried out for fall data (September-November) in 1979, 1987 and 1999 and for full year data in 1987-1988 and 1999-2000.

¹ Economic well-being is not an easy concept to measure or define. In the present paper I define *economic well-being* as a household's or individual's total access to goods and services. This definition enables the comparability of *household production* - producing goods and services within a household - and *money income* - providing means to either buy or produce goods and services. Omitting out the value of household production means that empirical estimates of economic well-being can be biased (see for example Bryant and Zick (1985)).

Table 1
Unemployment rate, Gini coefficient and poverty rate
in Finland from 1979 to 2001

Year	All unemployed (in 1000)	Unemployment rate	Gini x 100	Poverty rate
1979	143	6.0	.	.
1980	114	4.7	.	.
1981	121	4.9	20.5	5.7
1982	135	5.4	.	.
1983	138	5.5	.	.
1984	133	5.2	.	.
1985	129	5.0	.	.
1986	138	5.4	.	.
1987	130	5.1	19.7	3.7
1988	116	4.5	20.2	3.7
1989	80	3.1	20.5	3.4
1990	82	3.2	20.2	3.4
1991	169	6.6	20.1	3.7
1992	292	11.7	19.9	3.2
1993	405	16.3	21.1	3.0
1994	408	16.6	21.1	3.0
1995	382	15.4	21.7	3.1
1996	363	14.6	22.3	3.5
1997	314	12.7	23.7	3.7
1998	285	11.4	24.8	4.3
1999	261	10.2	25.9	4.3
2000	253	9.8	26.7	4.5
2001	238	9.1	25.8	5.0

Note: The Gini coefficient is calculated between individuals by using equivalent disposable income. The poverty line is set to 50% of the equivalent median income.

Modified OECD equivalence scale used in both cases.

Source: Statistics Finland (several years); Statistics Finland (2003).

2 Literature

2.1 Trends in income inequality and poverty

Income inequality in Finland, measured in disposable income, fell from 1966 to 1976 and changed little until the early 1990s. Atkinson et al. (1995) recorded that in the late 1980s Finland had one of the most equal distributions of income among 15 OECD countries measured by the Gini coefficient and 90/10 ratio. The Lorenz curve for Finland dominated those for all other countries included in the study.²

The depression did not increase income inequality at the beginning of 1990, partly because there was a substantial drop in the average real income. Since 1994, however, inequality has

² This is at least partly due to the welfare state structure in these countries; high taxes and public expenditure aimed at equalizing economic outcomes (Atkinson et al., 1995; Aaberge et al., 2000).

risen considerably (Table 1). After the depression, average real incomes and capital incomes grew substantially - particularly income from dividends. At the upper end of the distribution incomes have risen faster than average real income. There has been little or no increase at all in real incomes at the bottom of the income scale. High income households have benefited also from reductions in progressive taxation (Statistics Finland, 2000a; Statistics Finland, 2000b; Riihelä et al., 2001b; Statistics Finland, 2003).

Riihelä et al. (2001a) and Riihelä et al. (2003) examined trends in poverty in Finland using the Household Budget Survey and Income Distribution Statistics. From the early 1970s to the mid 1990s, the relative poverty rate declined, and rose during the latter part of the 1990s. Table 1 shows similarly that the proportion of the population below 50% of median income increased towards the end of the 1990s. Furthermore, there has been an absolute drop in mean real disposable income for all unemployed households during the 1990s, which suggests that unemployed households are the most vulnerable group of the population (Riihelä et al., 2001a; Riihelä et al., 2003; Riihelä et al., 2001b).

2.2 Structure and time use of households

The average number of individuals in Finnish households has decreased over time, being 2.6 in 1979 and 2.16 in 1999 (Table 2). This proves that the number of single person and lone parent households has increased and the number of large households has declined. Changes in labor force participation over the time period studied has also been substantial. Women's labor force participation is high in Finland, being normally between 70-80% but, during the depression, this rate dropped, especially for those with children below school age. The increase in unemployment and the introduction of the home care subsidy at the end of the 1980s may account for why women stayed at home taking care of their children and household (Statistics Finland, 1994).

Table 2
Changes in household size and time spent in housework, hours and minutes/day

Year of the data	Number of households	Persons on average household	Time spent on housework		
			All	Women	Men
1987-1988	2 082 000	2.3	3.04	3.50	2.15
1999-2000	2 365 000	2.16	3.10	3.47	2.27
fall 1979	1 831 000	2.6	2.46	3.39	1.50
fall 1987	2 082 000		2.47	3.35	2.01
fall 1999	2 365 000		2.51	3.36	2.03

Note: The time use on housework includes 10-64 years of age in fall 1979, 1987 and 1999 and over 10 years of age in 1987-1988 and 1999-2000.

Source: Statistics Finland (several years); Pääkkönen and Niemi (2002); Niemi and Pääkkönen (2001).

Despite these changes, the overall time use did not changed very much between the end of 1970 and 2000, measured in time use studies. Changes in the labor market and the expansion of the information society show their effects in Time Use Data but do not remarkably alter the main structure of time use. On average, employment, housework, sleeping and free time take

a little more than 20 hours of the average day of people of 10-64 years of age. The structure of time use has become more similar throughout the years between various social groups and between men and women. However, there can be considerable variation in time use between individuals or sub-groups (Juntto, 2002). Housework is still divided according to traditional gender roles. Men spend more time on work outside the home than women do and women do more housework compared to men (Table 2).

2.3 Earlier studies on households production and extended income

In empirical studies it is assumed that household production adds to the economic well-being of household members. Evidence shows that full income, extended income or imputed income (income including the value of household production) is more equally distributed among households than the traditionally measured disposable income. There are only a very few (one published) studies on extended income in Finland but in other countries the topic has gained much greater attention.

Heikkilä and Piekkola (2003) used Finnish Time Use Data from years 1987-1988 and 1999-2000 collected by Statistics Finland, and examined how the inclusion of the value of household production in household income affects income inequality in Finland. The study was based on Becker's notion on comparative advantage to explain why men specialize in paid work and women in unpaid work. The main conclusion was that the value of household production has a decreasing effect on income inequality, as measured by Gini coefficient and income decile groups.

Bryant and Zick (1985) studied how rural and urban income distributions change if the value of household production is added to money income. They used U.S. data from the Panel Study of Income Dynamics, PSID, in 1975-1976 and 1979-1980. Only white, married-couple households with working husbands were included in the study. Bryant and Zick (1985) noticed that household production significantly raised the average family's access to goods and services. Furthermore, husbands contributed more in terms of earnings and wives in terms of household production in both rural and urban households. The Gini coefficient suggests that poor rural households make greater use of household production in order to increase their access to goods and services than do urban households.

Gottschalk and Mayer (1997) used the U.S. Panel Study of Income Dynamics (PSID) for the years 1976 and 1988 and studied household production and its effect on trends in income inequality in the USA. Households headed by people aged from 25 to 64 years were included. The paper applied three methods to measure income. Regardless of the income measure used, the results showed that housework reduced the observed inequality among households, even when inequality increased between 1976 and 1988.

Jenkins and O'Leary (1994) and Jenkins and O'Leary (1995) examined the distribution of extended income in the U.K. The paper estimated models of household time use with data from the 1987 Social Change and Economic Life (SCEL) time-budget survey, and applied the estimates to impute time use to respondents to the 1986 Family Expenditure Survey (FES).

The paper modified the assumptions of the traditional full-income concept and subdivided time spent at home into two activities: household production and 'pure' leisure. Due to difficulties in distinguishing genuine leisure activities from other leisure activities, which led to valuation problems, Jenkins and O'Leary (1994) decided not to incorporate pure leisure activities within the calculations of income. The results showed that extended income is more equally distributed than money income for non-elderly one-family households. The result holds, regardless of which method is used to value household production. Broadening the income definition increases the income shares of the poorest tenths and decreases those of the richest tenth.

Bonke (1992) explored what implications the inclusion of household production has on the distribution of economic resources in Denmark. The data were drawn from the Time Use Survey for the year 1987, which is a random sample of about 5000 individual adult Danish people. The economic information was taken from the register of income taxation for the respondents in the Time Use Survey. Bonke (1992) found that housework increases the access to goods and services as much as working in the labor market. The income inequality diminishes when household production is measured by the Gini coefficient. This suggests that low income households compensate their low earnings by relatively large household production.

3 Research strategy

3.1 Defining consumption possibilities

Consumption possibilities are assumed to supply well-being directly or indirectly to individuals or households. We must accept that monetary income, *here* money income, and the output of household production are comparable and substitutable in terms of consumption possibilities. It does not matter for an individual or a household whether the consumption possibilities are generated by money income or by household production. Consumption possibilities refer here to money income (which is either consumed directly or used as inputs in the household production process) plus the value of productive household activities. Other sources of income, wealth, borrowing or savings are not taken into consideration (due to data restrictions). Consumption possibilities are

$$(1) \quad C_i = M_i + RH_i,$$

where C is the consumption possibilities of an individual i , M is the income before taxes and nontaxable income transfers, and includes wages, taxable income transfers and income from capital, H is the hours of productive housework and R is the wage of a municipal housekeeper. For the household the same function becomes

$$(2) \quad C_h = \sum_{i=1}^n M_i + R \sum_{i=1}^n H_i,$$

where C is the consumption possibilities of a household h . Here n is the total number of household members. The particular income was chosen because it was included in all of the datasets used and therefore comparison between years was made possible. Due to data restrictions other figures for income, like disposable income, were not available. The chosen housekeeper wage level was considered to be the most reliable estimate for the purpose of the study³.

3.2 The data

Ideal data to study consumption possibilities would each year include the time use of all household members, income, transfers, taxes, wealth, savings and borrowing at the individual and household level plus household characteristics. This would report the total available income of a household and total productive housework carried out. Furthermore, an ideal measure of the value of household production would include both primary activities and productive secondary activities.

The data required to study consumption possibilities at the individual level need to include at least the amount of time spent on primary activities and money income information plus background characteristics. The Time Use Data used by the present paper, collected by Statistics Finland in 1979, 1987-1988 and 1999-2000 covering the time period of interest, satisfy these requirements. Secondary activities are included only as a sensitivity analysis in Appendix 2 for one dataset, 1987-1988⁴. The data used provide us with a rich picture of the changes across time in the distribution of economic well-being.

The Time Use Data, gathered through detailed time-diary surveys and augmented with interviews, are combined with money income, which has been linked at the person level to the Time Use Data. The datasets are representative sample surveys and are considered to be of high quality, while the income information is similar to that available in the typical income distribution survey in Finland that relies heavily on register information. The survey includes persons 10-64 years of age not living in institutions. The respondents were advised to record in ten minute intervals their primary and secondary activities.

The data in 1979 cover a total of 12,057 days. In 1979 only the months from September to November were included. The time use study in 1987-1988 included the whole year, not just the fall as in 1979. The survey is based on individual samples, as in 1979, and the respondents kept a diary for two successive days. The third Time Use Data used was carried out in 1999-2000. The data were collected at both the household and individual levels by using interviews and diaries, similarly with the two other time use studies. The respondents kept a diary for two days, one being a weekday and the other either a Saturday or a Sunday. The respondents were all 10 years or older household members (Niemi and Pääkkönen, 1989; Väisänen, 2002).

³ The housekeeper wage is an average figure for each year studied and it is calculated from regular monthly wage which includes regular compensations.

⁴ Secondary activities could not be included for the whole dataset for reasons of availability.

The sample includes individuals aged 25-64, who are either employed, unemployed or taking care of their own household. Students, pensioners and the unemployable are excluded from the main analysis, as their time use patterns are likely to be quite different from others, meaning those included in the sample. The focus of the paper is on individuals for whom both labor market work and household production are important (see Jenkins and O'Leary, 1995). Therefore those population categories not meeting these requirements are not included. Those who kept a time use diary only for one day are excluded due to the anticipated bias these results would create. From the 1987-1988 data, one outlier is dropped due to the excessively high income of this observation. Household level comparison is possible for money income only, because the data of 1987-1988 do not include time use information on all the members of the same household. Unlike the individual level analysis, household level analysis considers all age groups.

When comparing the full time period the data from September to November are included each year since the data in 1979 were gathered only during these months (September-November). This analysis is labeled fall 1979, 1987, 1999. When the data collected during the whole year are included, the two latest data sets, years 1987-1988 and 1999-2000, are used. Most of the results are at the individual level and when possible also at the household level.

3.3 Measuring household production

In the present paper, values of time use inputs are chosen for the unit of measurement of household production. In order for it to be comparable with national accounts, household production should be valued on the basis of outputs. This would allow for the assessment of productivity. However, the output-based method of valuation requires data which are not readily available (see Taimio, 1991; Eurostat, 1999). The Eurostat (1999) report recommends that household production is valued through the inputs (meaning the costs of inputs) used in the production.

The productive activities are the so-called main functions of a household: providing housing, providing nutrition, providing clothing, providing care and education, and volunteering⁵. Ancillary activities like animal care, gardening and shopping are included as well, similarly with the categories 'helping other households' and 'travel related to household production'.

For the valuation of these productive activities (the value of labor), we need to choose an appropriate wage level. We can either assume that the time spent on unpaid work reduces the time spent on paid work. This suggests that time spent on unpaid work is a cost and we should apply so called opportunity cost method. The opportunity cost method values an hour of housework on the basis of the opportunity cost of that time – normally the market wage of an individual. The main problem with the opportunity cost method is that it yields different values for similar products depending on who performed the task. Furthermore, people are often

⁵ In this study children enter as a kind of consumer goods for their parents. The well-being is not looked upon from the perspective of children. This approach is chosen so that the equivalence scale can be kept the same throughout the study.

not free to choose the number of their working hours. The method has not been recommended to be used for the valuation of household production. It may be relevant only for studying utility maximization at the individual level (Eurostat, 2003).

On the other hand, we can assume that households save money by doing housework themselves instead of buying market goods and services or hiring someone else to perform the required tasks. This method of valuation is called the market replacement cost method (Eurostat, 2003; Becker, 1965). The replacement cost method provides several options. First, we can use the wages of specialized workers in market enterprises. Second, we can apply the wages of specialized workers at home and third, we can use the wages of generalist workers. Using the wages of a specialized worker in market enterprises is complicated, as an example because several wages have to be examined in order to find an appropriate combination of wages for different tasks. Furthermore, there are some activities for which no specialized market substitute can be found (Eurostat, 2003; Merz and Kirsten, 1999).

The method with a polyvalent substitute's or generalist's wage seems to be the more appropriate basis for valuing household labor. The advantages are that the working conditions are similar to those of household work and the content of the work is similar to housework. However, some of the potential problems are that even a generalist worker does not perform all the tasks occurring in households (as an example money management), wages for housekeepers are not always available and wage differential between women and men in a labor market are reflected in the housekeeper wages which is an occupation dominated by women (Eurostat, 2003; Merz and Kirsten, 1999; Taimio, 1991).

I choose to use the housekeeper cost method (generalized wage method) where time spent in housework is multiplied by the hourly wage of a person in an equivalent job. Here I use the hourly wage of a municipal housekeeper. The housekeeper cost method is chosen because it is widely used and the valuation method is straightforward. The method gives the same value for household production whether carried out by an individual earning high wage or an individual earning low wage. The opportunity cost method is used only as a sensitivity analysis in Appendix 1. I use Heckman's selection correction method which is widely applied when calculating the value of household production by the opportunity cost method. One important implication is that the consumption possibilities have to be calculated on both partners' market contribution and housework contribution. This is necessary in order to make the distributional analysis of consumption possibilities at an individual level.

Still another question is the choice of a wage concept used in determining the wage level of a housekeeper. In fact, the appropriate wage concept is much debated in the international literature. The main question is, should we use gross wages or net wages? The fact is that the value of labor is highly dependent on the valuation method. However, this is not a disadvantage as such (Varjonen et al., 1999).

It has been argued that different wage concepts might be used depending on the end-use of the results. Gross wages show what the total costs to households would be of employing others to produce goods and services. On the other hand, net wages reflect the real conditions of

housework. Net wage might be an appropriate choice if the purpose is to describe changes in the household's disposable income when it produces a service instead of buying that service (Varjonen and Aalto, 2006). Furthermore, according to German Federal Statistical Office, basic conditions of household production do not comply with those of usual paid work. There are no taxes to be paid in neither household nor national insurance, nor does a claim exist for paid days of illness or vacation leave (Merz and Kirsten, 1999). Based on these claims it is taken here that net wages are more appropriate for the purposes of this study than gross wages. Therefore, the average net wage of a municipal housekeeper is chosen to represent the value of housework time.

3.4 Inequality and poverty measures

Levels and changes of inequality are analyzed by applying half the squared coefficient of variation, $GE(2)$, and the Gini coefficient. The $GE(2)$ belongs to the class of Generalized Entropy $GE(\alpha)$ indices which are very useful due to their additive decomposability. Decomposition by subgroups provides a picture of inequality profiles. Decomposition of Gini coefficient by income source is also presented for the main results. In order to examine levels of and changes in low incomes, the head count ratio (H) and poverty gap ratio (PGR) are used. An individual (or household) is regarded as having low incomes if her/his income or consumption possibilities remain below the predetermined low income line. This means that low income measures reflect poverty which is related to access to economic resources determined via money income and consumption possibilities. Comparative results are calculated by excluding parts of the data and by taking all population groups including students, pensioners and unemployable.

All the figures used in calculations of inequality and low income measures are annual figures. The monetary measures are altered to correspond to euro values in the year 2000 by using the Cost of Living Index. This conversion is done in order to make the figures comparable between various years. Finally, a simple household equivalence scale is applied in household level calculations:

$$(3) \quad \frac{W}{S^{0.5}}$$

where W is the total income of a household and S is the number of household members.

4 Results

4.1 Aggregate trends

Table 3 reports the decile group means of money income and consumption possibilities of individual data in 1987-1988 and 1999-2000. Individuals between 25 and 64 years of age are included and students, pensioners and unemployable are excluded. The decile group means of

consumption possibilities are considerably higher than the corresponding means of money income. The percentage change from money income to consumption possibilities is greatest in low income decile groups and respectively smallest in high income decile groups. The same trend is seen when consumption possibilities are divided by money income (times 100). The ratio between the highest and the lowest income decile groups drops significantly when moving from money income to consumption possibilities. The corresponding results for fall 1979, 1987 and 1999 are presented in Appendix 3. The C/M figures are smaller (in almost all deciles) in 1999-2000 than in 1987-1988. This is not an indication of diminished importance of household production over time. Instead it shows that money income has increased faster than household production.

Table 3
Decile group means in euros of money income (M) and consumption possibilities (C) and consumption possibilities divided by money income (C/M x 100) in 1987-1988 and 1999-2000, individual data

Decile groups	1987-1988			1999-2000		
	M	C	C/M x 100	M	C	C/M x 100
1	3541	13003	367	5157	14749	286
2	9790	20229	207	10260	22782	222
3	13543	23528	174	14709	26739	182
4	15682	26203	167	18068	29803	165
5	17681	28793	163	20397	32650	160
6	19610	31503	161	22728	35367	156
7	21931	34623	158	25458	38359	151
8	25176	38356	152	29080	42208	145
9	30088	44030	146	35212	48686	138
10	46041	59495	129	59961	72760	121
Mean	20306.7	31976.1		24093.2	36400	
Std. Dev.	12003	13192.8		17452.4	17906.2	

Source: Own calculations based on the Finnish Time Use Data.

The figures suggest that, as a share of consumption possibilities, household production is more important for low income earners than for high income earners. For high income earners, money income dominates the composition of consumption possibilities. For the lowest decile group, household production is approximately 70% of the total value of consumption possibilities when the same ratio for the highest decile group is around 20%. Household production increases the consumption possibilities of all income groups but its effect is by far the greatest in low income decile groups. Household production thus equalizes consumption possibilities.

The Finnish Time Use Data indicate that, on average, the amount of time spent on household production drops when income increases and/or when hours of market work rise. High income households may also do less housework compared to low income households since it

can be assumed that high income earners own a greater number of household durable (domestic appliances) and save time required in housework or hire outside help to carry out various activities. Many of the household productive activities are time-consuming and if these can be bought from the market the time saved is spent on, as an example, leisure activities. High income earners can also be assumed to spend money on ready prepared food or eat out in restaurants and thus spend less time on food preparation than low income earners.

Table 4 shows "transition matrices" of individual data. Money income and consumption possibilities are divided into five decile groups (quintiles). Each of the figures, $p_{ij}, i = 1, \dots, n, j = 1, \dots, k$ in the table represents the possibility that an individual in group i (the money income group) is also in group j (consumption possibilities group). That is, we can see whether individuals move or not from one quintile group to another when money income is altered to consumption possibilities. The sum of each row equals 1.00 (there are small differences due to rounding) because each individual either has to stay in the original location or move to another one. It seems that an individual either stays in the same quintile group as before or moves one quintile group up or down compared to the original one. Those either in the first money income quintile group or in the fifth money income quintile group tend to remain in their original quintile groups. Individuals in the middle quintile groups have the greatest variation between different locations. It must be noted that individuals in the highest money income quintile group never move to the lowest consumption possibility quintile group and very rarely even to the second one. However, individuals in the lowest money income quintile group do make their way rather often to higher quintile groups in consumption possibilities and on some occasions even to the highest one.

4.2 Changes in inequality

The overall trends in inequality are shown by Lorenz curves in Figure 1. The Lorenz curves for individual data each year, first for the whole year 1987-1988, 1999-2000 and then for fall 1979, 1988, 1999, are drawn for money income and consumption possibilities. These Lorenz curves do not cross. The results verify that economic well-being is more equally distributed when calculated by using consumption possibilities than when calculated by using money income. This trend is as would be expected based on decile group means (Table 3). The Lorenz curve for the year 1987 or 1987-1988 is closer to the diagonal than in other years which means that both money income and consumption possibilities are more evenly distributed in 1987 and in 1987-1988 than in 1979, 1999 or in 1999-2000.

In line with the results drawn by looking at the Lorenz curves, the evidence in Table 5 shows that consumption possibilities are more equally distributed than money income. The estimated inequality measures are smaller for consumption possibilities than for money income in all the years whether one compares the whole year in 1987-1988, 1999-2000 or fall 1979, 1987, 1999. Thus, the extended money income changes our impression of the income inequality. When the changes between years are compared, the inequality measures first drop, from 1979

to 1987, and then rise from 1987 to 1999 or from 1987-1988 to 1999-2000, regardless of whether one looks at individual figures or household figures.

Table 4
Transition matrices, whole year 1987-1988, 1999-2000 and fall 1979,
1987, 1999, individual data

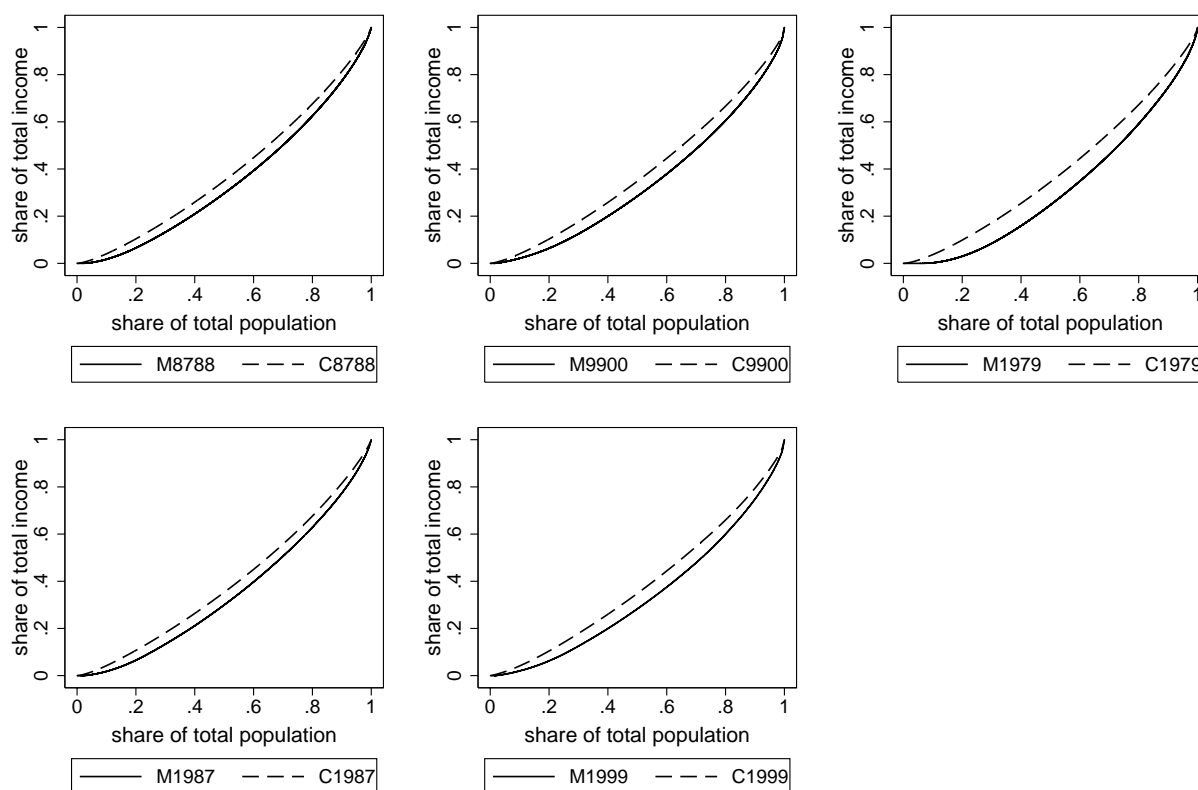
Year	Money income	Consumption possibilities				
		1	2	3	4	5
1987-1988	1	0.54	0.19	0.13	0.09	0.05
	2	0.31	0.28	0.18	0.15	0.08
	3	0.13	0.32	0.26	0.20	0.08
	4	0.02	0.21	0.36	0.27	0.14
	5	0.00	0.00	0.08	0.28	0.65
1999-2000	1	0.54	0.20	0.13	0.09	0.04
	2	0.35	0.27	0.21	0.12	0.05
	3	0.11	0.34	0.29	0.18	0.08
	4	0.01	0.19	0.31	0.33	0.16
	5	0.00	0.00	0.06	0.27	0.67
1979	1	0.47	0.18	0.16	0.13	0.06
	2	0.36	0.25	0.16	0.13	0.10
	3	0.15	0.30	0.26	0.20	0.09
	4	0.02	0.26	0.29	0.25	0.17
	5	0.00	0.01	0.13	0.29	0.58
1987	1	0.53	0.17	0.15	0.12	0.04
	2	0.33	0.26	0.16	0.15	0.10
	3	0.13	0.32	0.29	0.17	0.09
	4	0.01	0.25	0.32	0.30	0.12
	5	0.00	0.00	0.08	0.27	0.65
1999	1	0.58	0.18	0.13	0.08	0.02
	2	0.30	0.33	0.23	0.11	0.04
	3	0.12	0.33	0.28	0.19	0.08
	4	0.00	0.16	0.33	0.42	0.10
	5	0.00	0.00	0.04	0.21	0.76

Source: Own calculations based on the Finnish Time Use Data.

However, the order of years changes when moving from money income to consumption possibilities. The year 1987 has the smallest measures for GE (2) and the Gini coefficient in all the cases but the years 1979 and 1999 switch places so that the year 1979 has the highest figures of income inequality measures in the case of money income and the year 1999 has the highest figures in the case of consumption possibilities. This means that in 1979 (fall data only) household production equalizes consumption possibilities in a greater degree than in 1999. As a general trend, the income inequality measures for consumption possibilities are closer to each other between years than are the corresponding figures for money income. This proves that consumption possibilities equalize economic well-being between years as well.

In order to examine whether changes in the tails and/or extreme observations account for differences across years, I analyzed three reduced samples. I first excluded the lower 5%, then the upper 5% and finally both upper and lower 5% of the data (Table 6). In all the cases, either individual data or household data and in every year, the estimated inequality measures drop systematically compared to those calculated with the original sample (Table 5).

Figure 1
Lorenz curves, whole year 1987-1988, 1999-2000 and fall 1979, 1987, 1999 for money income (M) and consumption possibilities (C), individual data



Source: Own illustrations based on the Finnish Time Use Data.

Table 5
Individual and household inequality results, whole year 1987-1988, 1999-2000 and fall 1979, 1988, 1999, money income (M) and consumption possibilities (C)

	Individual				Household	
	100xGE(2)	100xGini	100xGE(2)	100xGini	100xGE(2)	100xGini
<i>Whole year</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>M</i>
1987-1988	17.47	8.51	30.33	21.90	11.48	25.30
1999-2000	26.23	12.10	32.50	22.77	19.92	30.29
<i>Fall</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>		
1979	29.72	10.38	37.34	22.73		
1987	17.29	8.19	29.94	21.47		
1999	26.79	12.89	32.95	23.00		

Source: Own calculations based on the Finnish Time Use Data.

The least changes are caused when the lower end is cut (Table 6). This is probably explained by the large number of zero or very small money income values in the data. Compared to figures in Table 5 the cut in the lower end keeps the direction of changes in the inequality measures the same between years and between money income and consumption possibilities within years. This means that cutting the lower end of the data does not alter the trend of inequality.

Table 6
Individual and household aggregate inequality results, whole year 1987-1988, 1999-2000 and fall 1979, 1988, 1999, when A 5% of the data is cut from both ends; B 5% of the data is cut from the lower end; and C 5% of the data is cut from the upper end, money income (M) and consumption possibilities (C)

		Individual				Household	
		100xGE(2)		100xGini		100xGE(2)	100xGini
		M	C	M	C	M	M
<i>A 5% cut from both ends</i>							
Whole year	1987-1988	8.30	5.78	22.90	18.87	5.93	19.58
	1999-2000	9.03	5.14	23.92	17.87	8.27	22.86
Fall	1979	13.32	6.23	29.32	19.72		
	1987	7.88	5.56	22.35	18.51		
	1999	9.56	5.53	24.41	18.30		
<i>B 5% cut from the lower end</i>							
Whole year	1987-1988	14.55	7.93	27.15	21.08	9.69	22.93
	1999-2000	23.35	11.44	29.85	21.84	17.68	27.96
Fall	1979	25.82	10.13	34.12	22.34		
	1987	14.45	7.73	26.82	20.82		
	1999	23.81	12.60	30.25	22.59		
<i>C 5% cut from the upper end</i>							
Whole year	1987-1988	11.04	6.36	26.44	19.77	7.63	22.20
	1999-2000	11.39	5.78	26.95	18.95	10.20	25.50
Fall	1979	16.78	6.53	32.99	20.18		
	1987	10.53	6.03	25.84	19.25		
	1999	12.01	5.84	27.49	18.84		

Source: Own calculations based on the Finnish Time Use Data.

The most substantial changes are caused when both of the tails are cut or only the upper tail of the data is cut. In contrast to results in Table 5, the trend of income inequality measures calculated using consumption possibilities now changes. Cutting both ends or the upper tail of the data leads to decreasing GE (2) and Gini coefficient figures between years, for both the whole year data and fall data. In the original data we had a decreasing trend for consumption possibilities only when moving from fall 1979 to fall 1987. From the results drawn we can see that the inequality results obtained from the original sample are sensitive to deletion of observations from either end or both ends.

As a comparison, if I also include the initially excluded population groups in the sample, i.e. rather than including only the employed or unemployed I also include students, pensioners and the unemployable, the inequality measures increase, apart from one case in 1999 (Table 7). It seems that inequality measures for consumption possibilities rise less than those for money income, evidencing the importance of housework as a consumption possibilities equalizer and as an equalizer of economic well-being. The trend between years stays the same; inequality measures first drop from 1979 to 1987 and then rise from 1987 to 1999 and from 1987-1988 to 1999-2000.

4.3 Changes in low incomes

Low income indices are relative measures where the poverty line (here *the low income line*) is chosen to be 50% of the median income or median consumption possibilities. The estimates of the head count ratio (H) and poverty gap ratio (PGR)⁶ are given in Table 8. The overall trend (H) indicates that the proportion of individuals below the low income line drops considerably when moving from money income to consumption possibilities. When comparing the development over time the proportion of low income individuals increases from 1987-1988 to 1999-2000, measured each by money income or by consumption possibilities.

Table 7
Individual and household, aggregate inequality results, whole year 1987-1988, 1999-2000 and fall 1979, 1988, 1999, when students, pensioners and the unemployable are included in the data, money income (M) and consumption possibilities (C)

	Individual				Household	
	100xGE(2)		100xGini		100xGE(2)	100xGini
<i>Whole year</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>M</i>
1987-1988	19.84	9.08	32.15	22.49	14.55	28.24
1999-2000	27.95	12.30	33.75	23.19	24.24	33.31
<i>Fall</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>		
1979	33.95	11.06	40.48	23.79		
1987	19.05	8.49	31.61	21.92		
1999	28.16	12.77	34.07	23.18		

Source: Own calculations based on the Finnish Time Use Data.

Table 8
Low income indices head count ratio, H, and poverty gap ratio, PGR, whole year 1987-1988, 1999-2000 and fall 1979, 1988, 1999, money income (M) and consumption possibilities (C)

	Individual				Household	
	H		PGR		H	PGR
<i>Whole year</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>M</i>
1987-1988	14.03	5.95	6.65	1.76	9.90	2.96
1999-2000	16.26	6.42	6.03	1.67	12.30	3.83
<i>Fall</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>		
1979	22.22	7.34	13.79	2.33		
1987	14.64	5.15	6.71	1.53		
1999	15.37	6.35	6.16	1.45		

Source: Own calculations based on the Finnish Time Use Data.

The trend from 1979 to 1987 shows that the proportion of low income individuals drops during this period. The extent or severity of low incomes (PGR) also decreases when comparing money income and consumption possibilities. The trend between years implies that, according

⁶ The poverty gap ratio or FGT(1) measure expresses the average distances of the poor below the low income line.

to this data, the severity of individual low incomes drops in all cases. The lowest figures for low income indices are in the year 1987 and the highest in 1979. When every population group is included in the sample (also students, pensioners and the unemployable), the low income measures increase compared to results from the original sample (Table 9).

Table 9
Low income indices, whole year 1987-1988, 1999-2000 and fall 1979, 1988, 1999, when students, pensioners and the unemployable are included in the data

	Individual				Household	
	H		PGR		H	PGR
<i>Whole year</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>M</i>
1987-1988	16.96	6.78	7.24	2.09	13.61	4.40
1999-2000	18.12	7.21	6.26	1.96	15.10	4.89
<i>Fall</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>		
1979	26.64	8.99	16.82	3.03		
1987	17.16	6.26	7.13	1.89		
1999	17.95	6.81	6.59	1.69		

Note: The low income line is set to 50% of the median.

Source: Own calculations based on the Finnish Time Use Data.

The low income figures in these Tables differ from those presented in the Table 1. The main reason for the difference is the different data and therefore different income concept used in these Tables. However, it is important that the trend over the years is the same in all of the Tables.

4.4 The structure of inequality

The Gini coefficient is decomposed by income source in order to better understand the development of inequality over time. The main source of inequality in this calculation is the consumption possibilities and the two sources of income are the money income and the value of household production. The method that is applied allows the measurement of the impact that a marginal change in a particular income source has on inequality. In Table 10 the decomposition of the Gini coefficient is presented so that the 'share' refers to the contribution that each income source has on inequality and the '% change' refers to the impact that a 1% change in the income source will have on total inequality. The Table is comparable to those Gini coefficient figures presented in Table 5.

The results show that the money income always forms a more significant part of total inequality (calculated by using consumption possibilities) than does the value of household production. Interestingly, in the fall data of 1987 it seems that the money income decreases inequality and household production increases inequality. In all the other cases this effect is the opposite, even when we look at the whole year data in 1987-1988. The most important finding is that when we compare changes over time we notice that in 1999 and in 1999-2000 the money income has a much greater role and household production the minor role in total inequality

than in any other case or in any other year included. Decomposition of the GE(2) measure by subgroups for individual and household level data are shown in Table 11.

Table 10
Decomposition of the Gini coefficient, whole year
1987-1988, 1999-2000 and fall 1979, 1988, 1999

Individual				
	Money income		Household production	
<i>Whole year</i>	<i>share</i>	<i>% change</i>	<i>share</i>	<i>% change</i>
1987-1988	0.64	0.01	0.36	-0.01
1999-2000	0.74	0.08	0.26	-0.08
<i>Fall</i>	<i>share</i>	<i>% change</i>	<i>share</i>	<i>% change</i>
1979	0.64	0.05	0.36	-0.05
1987	0.63	-0.01	0.37	0.01
1999	0.81	0.12	0.19	-0.12

Source: Own calculations based on the Finnish Time Use Data.

Table 11
Decomposition of individual and household income inequality and inequality of consumption possibilities by population sub-groups, whole year 1987-1988, 1999-2000 and fall 1979, 1988, 1999, % is percentage of the corresponding aggregate inequality, money income (M) and consumption possibilities (C)

100xGE(2)									
Individual		Within-group inequality				Between-group inequality			
<i>Subgroup</i>	<i>Whole year</i>	<i>M</i>	<i>(%)</i>	<i>C</i>	<i>(%)</i>	<i>M</i>	<i>(%)</i>	<i>C</i>	<i>(%)</i>
Household type	1987-1988	17.26	(98.80)	7.96	(93.54)	0.21	(1.20)	0.55	(6.46)
	1999-2000	25.99	(99.09)	11.81	(97.60)	0.24	(0.91)	0.29	(2.40)
Age group	1987-1988	17.14	(98.11)	8.40	(98.71)	0.33	(1.89)	0.11	(1.29)
	1999-2000	25.69	(97.98)	11.95	(98.76)	0.53	(2.02)	0.15	(1.24)
Sex	1987-1988	15.44	(88.38)	8.49	(99.76)	2.03	(11.62)	0.02	(0.24)
	1999-2000	24.64	(93.94)	12.05	(99.59)	1.59	(6.06)	0.05	(0.41)
	<i>Fall</i>	<i>M</i>	<i>(%)</i>	<i>C</i>	<i>(%)</i>	<i>M</i>	<i>(%)</i>	<i>C</i>	<i>(%)</i>
Household type	1979	29.45	(99.09)	9.88	(95.18)	0.27	(0.91)	0.50	(4.82)
	1987	17.12	(99.02)	7.70	(93.90)	0.17	(0.98)	0.50	(6.10)
	1999	26.31	(98.21)	12.42	(96.35)	0.48	(1.79)	0.47	(3.65)
Age group	1979	29.28	(98.49)	10.28	(99.13)	0.45	(1.51)	0.09	(0.87)
	1987	17.01	(98.38)	8.12	(99.15)	0.28	(1.62)	0.07	(0.85)
	1999	26.27	(98.06)	12.74	(98.84)	0.52	(1.94)	0.15	(1.16)
Sex	1979	25.85	(86.98)	10.37	(99.90)	3.87	(13.02)	0.01	(0.10)
	1987	15.25	(88.20)	8.18	(99.76)	2.04	(11.80)	0.02	(0.24)
	1999	25.30	(94.47)	12.82	(99.46)	1.48	(5.53)	0.07	(0.54)
Household		Within-group inequality				Between-group inequality			
<i>Subgroup</i>	<i>Whole year</i>	<i>M</i>	<i>(%)</i>			<i>M</i>	<i>(%)</i>		
Household type	1987-1988	10.62	(92.51)			0.86	(7.49)		
	1999-2000	19.00	(95.43)			0.91	(4.57)		

Note: HOUSEHOLD TYPES, 1. living with parents, unmarried, no children under 18 years of age; 2. unmarried, divorced or widowed, no children under 18 years of age; 3. married or cohabiting, no children under 18 years of age; 4. married or cohabiting, children under 18 years of age; 5. single parent, children under 18 years of age.

AGE-GROUP, 1. 25-34; 2. 35-44; 3. 45-54; 4. 55-64.

Source: Own calculations based on the Finnish Time Use Data.

Decomposition by household type, age group and sex are documented at the individual level and by household type at the household level. The measure GE (2) is divided into within-group inequality and between-group inequality. These categories are further divided into two in the case of individual data: money income and consumption possibilities. In general, within-group inequality dominates the between-group inequality both at the individual level and at the household level. Money income has the highest values in the within-group component in the household type decomposition and the between-group component in the case of sex decomposition. Consumption possibilities have the highest values in the within-group component in the sex decomposition and the between-group component in household type decomposition. The trend over years of within group inequality follows the general development; inequality first drops and then rises again towards 1999-2000. Between-group inequality does not have a consistently similar trend to within-group inequality since there are some deviations of general development in the data in 1999 and 1999-2000.

On the grounds of the decomposition results by household type, it is clear that within-group inequality dominates the between-group inequality for each year. The between group component is 8% or less of the total inequality for both money income and consumption possibilities. This means that there are striking differences and variation in income and in consumption possibilities within household types. There is no clear trend as to which of the household types has the greatest within-group variation, since the domination of the household type varies between years.

The decomposition by age-group shows that the within-group component dominates the between-group one. The greatest within-group differences in both cases, in money income and in consumption possibilities and in every year, are found in the highest age-group, 55-64 years of age. In the decomposition by sexes the between-group inequality of money income has higher figures than any of the other decompositions but this effect vanishes when looking at the decomposition of consumption possibilities where the share of between-group inequality has dropped. This suggests that, since men earn higher wages than women, women compensate lower income by carrying out more household production activities than men do. This is evidenced also by time use studies. One interesting result in sex decomposition is that within-group inequality of money income has an increasing trend between years and between-group inequality a correspondingly decreasing trend. This reflects many things, among which are the increased labor force participation of women and a slight drop in gender differences in wages.

5 Conclusions

The paper analyzed the changes in the distribution of economic well-being and changes in income inequality in Finland between 1979 and 2000, when the value of household production (as a time input) was added to money income. This new measure, consumption possibilities, was then used to calculate income inequality indicators and low income indices. The

level, trend and structure of money income distribution and the distribution of consumption possibilities were all studied.

The results indicate that consumption possibilities are more equally distributed than money income is. Similarly, the number of individuals below the low income line drops when moving from money income to consumption possibilities. Thus, widening the traditional money income concept by including the value of productive household activities alters our understanding of the distribution of economic well-being.

Household production increases the consumption possibilities of all income groups but its effect is most significant in low income decile groups. As a share of consumption possibilities, household production forms a significantly more important part for low income earners than for high income earners. For high income earners money income dominates the formation of consumption possibilities.

The decomposition of the Gini coefficient by income source shows that when looking at the consumption possibilities inequality the money income forms a greater share of the total inequality compared to household production. This effects strengthens in time. The decomposition of the GE (2) measure by sub groups indicate that the within-group inequality dominates the between-group inequality both at the individual level and at the household level. Even when the structure of households changes and labor force participation alters it is obvious that work carried out in households clearly raises an individual's access to consumption goods and services and therefore increases economic well-being at all times. It is also obvious that since men earn higher wages than women, women compensate lower income by carrying out a greater number of household production activities than men do. This is also evidenced by time use studies.

Appendix 1 – Opportunity cost method

As a comparison to earlier obtained results, opportunity cost estimates by taking individual wage rates are applied to value housework time by using 1987-1988 individual data only. In the data there is no wage information for all individuals. Some of the individuals are not working or they are taking care of their households and thus have missing wage values. Therefore, opportunity cost estimates are derived by applying Heckman's selectivity correction method (Heckman, 1979). Jenkins and O'Leary (1994) explain the method as follows; the model estimates a regression model of the hourly wage rates observed for those having a value for the hourly wage, and uses this estimate to impute wage rates to all adults in the sample.

The Heckman model eliminates bias due to missing data. It is a two equation model including both a wage equation (a sample selection) and an equation of primary interest (called here hours equation). The variables in the wage equation are assumed to determine whether the

dependent variable in the hours equation is observed or not. Separate regressions are run here for women and men.⁷

In the wage equation the difference between a person's market wage (what she/he could earn in the labor market) and her/his reservation wage (the wage rate needed to make a person choose to participate in the labor market), is a function of characteristics such as age, education and where a person lives. In the hours equation, the number of labor hours supplied depends on the wage, home characteristics etc. The actual figure for hours equation is observed only if a person is working (market wage exceeds the reservation wage) (Greene, 2008).⁸

The wage equation is of the form,

$$(1) \quad z_i^* = w' \gamma_i + u_i$$

and the hours equation is of the form,

$$(2) \quad y_i = x_i' \beta + \varepsilon_i$$

The y_i is observed only when z_i^* is greater than zero. It is also assumed that ε_i and u_i have a bivariate normal distribution with zero means and correlation ρ (Greene, 2008). The exogenous variable w in the wage equation includes age-cohort dummies, dummy for educational level and marital status, dummy for age of children and region of living. The exogenous variable x in the hours equation are age-cohort dummies, dummy for educational level and region of living. Table 13 shows the estimation results first for the hours equation secondly for the wage equation.

Table 12
Aggregate inequality and low income results, whole year 1987-1988,
by using opportunity cost method to value household production,
individual data, money income (M) and consumption possibilities (C)

	Individual			
	100xGE(2)		100xGini	
<i>Whole year</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>
1987-1988	17.47	12.36	30.33	25.56
	<i>H</i>		<i>PRG</i>	
<i>Whole year</i>	<i>M</i>	<i>C</i>	<i>M</i>	<i>C</i>
1987-1988	14.03	7.80	6.65	2.26

Source: Own calculations based on the Finnish Time Use Data.

The results show that the inequality indices GE(2) and the Gini coefficient as well as low income indices H and PGR for consumption possibilities rise compared to results where house-

⁷ Estimated opportunity wage rates differ between individuals, unlike the wage value of a municipal housekeeper. Due to wage differences between individuals the inequality results obtained for consumption possibilities by using a housekeeper's average wage are likely to be smaller than those obtained by individual wage rates.

⁸ Hourly wage rates are calculated here by exploiting reported regular weekly working hours and salary obtained from register data (already including benefits in kind).

hold production was valued by using the wage of a municipal housekeeper (Tables 12, 5 and 8).

Table 13
Estimation results of the Heckman model

Hours equation	Women	Std.Err	Men	Std.Err
Constant	5.57*	0.18	7.21*	0.29
Age, 0 class < 35:				
35-44	0.90*	0.13	1.50*	0.16
45-54	0.68*	0.14	1.75*	0.19
55-64	0.43*	0.12	0.66*	0.30
Secondary schooling	0.88*	0.12	1.62*	0.15
University	4.56*	0.21	6.38*	0.26
Region of living, 0 class Helsinki:				
Other Matropolitan area	0.08	0.26	-0.05	0.40
Other Southern Finland	-1.76*	0.17	-2.47*	0.30
Central Finland	-2.13*	0.18	-3.35*	0.31
Northern Finland	-1.73*	0.22	-3.00*	0.34
Wage equation	Women	Std.Err	Men	Std.Err
Constant	1.74*	0.12	1.68*	0.21
Age, 0 class < 35:				
35-44	0.10	0.73	-0.06	0.11
45-54	-0.10	0.09	-0.26*	0.12
55-64	-0.59*	0.10	-0.21	0.15
Secondary schooling	0.08	0.06	0.10	0.90
University	0.34*	0.10	0.41*	0.17
Married or cohabiting	-0.13*	0.07	0.95*	0.10
Children under 7 years of age	-0.70*	0.07	-0.19	0.12
Region of living, 0 class Helsinki:				
Other Matropolitan area	0.03	0.12	0.00	0.27
Other Southern Finland	-0.23*	0.09	-0.33*	0.21
Central Finland	-0.30*	0.09	-0.64*	0.21
Northern Finland	0.03	0.12	-0.76*	0.22
n	4326		4214	
rho	-0.186		-0.34	
Wald test of independent equations:				
chi2(1)	29.84		33.43	
Prob>chi2	0.0000		0.0000	

Note: *Significant at 1% level.

Source: Own calculations based on the Finnish Time Use Data.

Appendix 2 – Secondary activities

Since I was not able to include secondary activities for all the years, I ran the analysis for the whole year of 1987-1988 with both primary activities and secondary activities. This was done in order to check how much, if at all, the results would alter, had secondary activities been included in the total time spent on household production. In 1987-1988 the secondary activities are divided into 9 classes and I use two of them: housework and childcare. Secondary activities, in this Time Use Data, are those activities carried out simultaneously and not in turn with the primary activity. How big a part of the total amount of secondary activities the

Time Use Data capture is another story and it is strictly dependent on the quality of the data. In addition, the respondents do not always mark down all the secondary activities. Tables 14, 5 and 8 show that the income inequality indicators and low income indices alter only slightly when including secondary activities at the value of household production.

Table 14
Aggregate inequality and low income results, whole year 1987-1988, when secondary activities are included in the household production individual data, money income (M) and consumption possibilities (C)

	Individual			
	100xGE(2)		100xGini	
Whole year	M	C	M	C
1987-1988	17.47	8.35	30.33	21.96
	H		PRG	
	M	C	M	C
Whole year				
1987-1988	14.03	5.88	6.65	1.77

Source: Own calculations based on the Finnish Time Use Data.

Appendix 3 – Decile group means

Table 15
Decile group means in euros of money income (M) and consumption possibilities (C) and consumption possibilities divided by money income (C/M x 100) in fall 1979, 1987 and 1999, individual data

Decile groups	1979			1987			1999		
	M	C	C/M x 100	M	C	C/M x 100	M	C	C/M x 100
1	425	10825	2547	3595	13111	365	5123	15128	292
2	4741	17973	379	9455	20136	213	10836	23238	214
3	9307	21455	231	13547	23093	170	15939	27396	172
4	12815	24013	187	15545	25458	164	18977	29871	157
5	15223	26520	174	17578	27775	158	21208	32382	153
6	17244	28971	168	19457	30148	155	23565	35101	149
7	19349	31743	164	21677	33218	153	26350	38001	144
8	22317	34835	156	24505	36987	151	30956	41451	134
9	26477	39974	151	28870	43006	149	37873	49577	131
10	43594	55621	128	45119	57376	127	64385	75814	118

Source: Own calculations based on the Finnish Time Use Data.

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