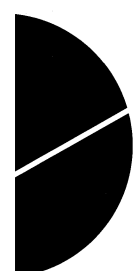


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**Analysing Effects of Removing  
Survivors' Pensions, Using the  
Microsimulation Model LOTTE**



## 1. Introduction

Taxes, pensions and social benefits are important in determining income, consumption and welfare of individuals, and are determinants of governmental expenses and income. As they affect inequality within and between groups, at a given point in time and over individual life cycles, taxes and benefits are important policy instruments.

Lately there has been a trend in the Nordic countries to individualize social security benefits. A consequence of individualization would be to remove the survivor's pension, making it impossible to inherit pension rights from a spouse. This means that survivor's no longer will be entitled to any pension at all if they are not old-age-pensioners or disability pensioners. Those with pensions on their own will lose only the inherited supplementary benefit.

In the following, we will analyse the effects on average pensions and disposable income as well as inequality, of removing the survivor's benefits. Section 2 gives an overview of the microsimulation model used for the calculations presented in this paper, while section 3 presents the effects on total revenue, the distribution of pensions and disposable income, the effects of losing a spouse and inequality of removing the survivor's pension. Concluding remarks are given in section 4.

## 2. A microsimulation model of taxes and pensions

The calculations presented in this paper are done using the microsimulation model LOTTE developed at Statistics Norway. The model is used for simulating direct personal taxes, pensions, maternity benefits etc., for individuals and households. LOTTE is a *system* of models that can be used separately or together, where calculation of direct taxes is the main part of the system.

The calculations in LOTTE use data from income tax forms from a representative sample of the Norwegian population. This includes information on all incomes and other information necessary to calculate taxes, e.g. wage income, interest payments, wealth, debt, sex, age, household composition and information from several official registers. Based on this information, taxes, pensions and other benefits are calculated for every person in the sample for any given tax- and social security system. The effects of changes in the tax- or/and the social security system are calculated under the assumption that behaviour is unaffected by these changes. In other words there are no behavioural assumptions in LOTTE.

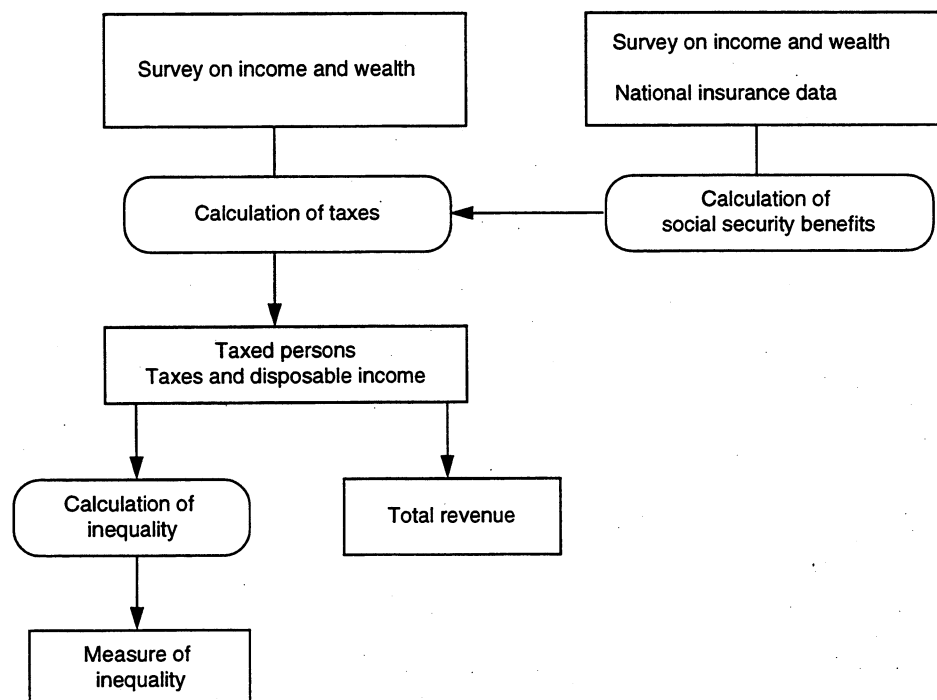
LOTTE TRYGD is the latest development in the LOTTE system of models. It simulates the social security system and makes it possible to analyse effects of changes in the rules for pensions and (some of) the other social benefit rules. The advantage of our model compared to more partial models is that taxes are incorporated into the model. Both taxes and benefits are regarded as a system when governmental budgets, disposable incomes and inequality are analysed. The following transfers are simulated: Old-age pensions, survivor's pension, state-employee pensions, support to single parents, sick-leave pay and maternity leave benefits. Child allowance is included in the tax part of the model, for historical reasons this is classified as a negative tax in the Norwegian tax system. Unemployment benefits, housing support and social assistance are not simulated in the model. Although we have data on the amounts received, this is not enough for the simulation of these benefits. Arneberg (1994a) contains more information about this model

LOTTE is used by the Norwegian Parliament (Stortinget) and the Ministry of Finance for estimating consequences of changes in the tax rules, when working with the national budget, in official documents and public committee reports. Furthermore, the model is used for analyses of the Norwegian economy by Statistics Norway. Thoresen (1993) and Thoresen (1995) are examples of this.

Figure 1 gives an overview over the calculations of taxes and social security benefits in LOTTE, where data from the survey of income and wealth are the data used. These are data from income tax forms and administrative registers. Old age pensions, survivor's pensions and some other benefits are based on the individual's previous work history. This necessitates the collection of data for incomes in previous years (the whole employment history) for each individual. When rules and amounts of benefits and pensions change, the old age pension and other pensions and benefits received by the individuals change. This affects incomes of pensioners, and these adjusted incomes are changed before taxes are calculated. The effects on inequality of disposable income in parts of or the whole population are analysed by using the inequality module, (see Aaberge 1986). This program is extensively used when analysing the effects of changes in the system of taxes or social security.

The tax model in LOTTE and the LOTTE system is described in closer detail in Arneberg et al (1995).

**Figure 1.** Calculation of Taxes, Pensions and Benefits in LOTTE



### 3. Removing the survivor's pension

A widow or widower is entitled to survivor's pension if the spouse had earned the right to pension, this means that this pension is dependent not on the individuals own behavior, but linked to other family members' work status and income.

Survivor's pension consists of a basic pension and a supplementary pension. Everyone who themselves or whose spouse has been insured in the National Insurance is entitled to basic pension benefits. If the deceased spouse had earned the right to supplementary benefit, the surviving spouse is entitled to 55 percent of the supplementary pension that the deceased received. The survivor's pension

is subject to an income test. If the surviving spouse has an annual income (excluding pensions) exceeding 50 percent of the basic pension, the pension will be equal to the difference between full pension and 40 percent of the earned income.

There is a trend towards individualization of social security benefits. A consequence of this would be to remove the survivor's pension, making it impossible to inherit pension rights from a spouse. In the following, we will analyse the effects of removing the survivor's benefits. This means that widows and widowers no longer will be entitled to any pension at all if they are not old-age-pensioners or disability pensioners. Those with pensions on their own will lose only the inherited supplementary benefit.

### 3.1. Less to pay - less received

When pensions are reduced, this will reduce payment from the National Insurance, but also reduce taxes paid. Hence the net effect on governmental finances will be less than the initial reduction in pension payments.

**Table 1.** Effects on revenue. Kroner and percent

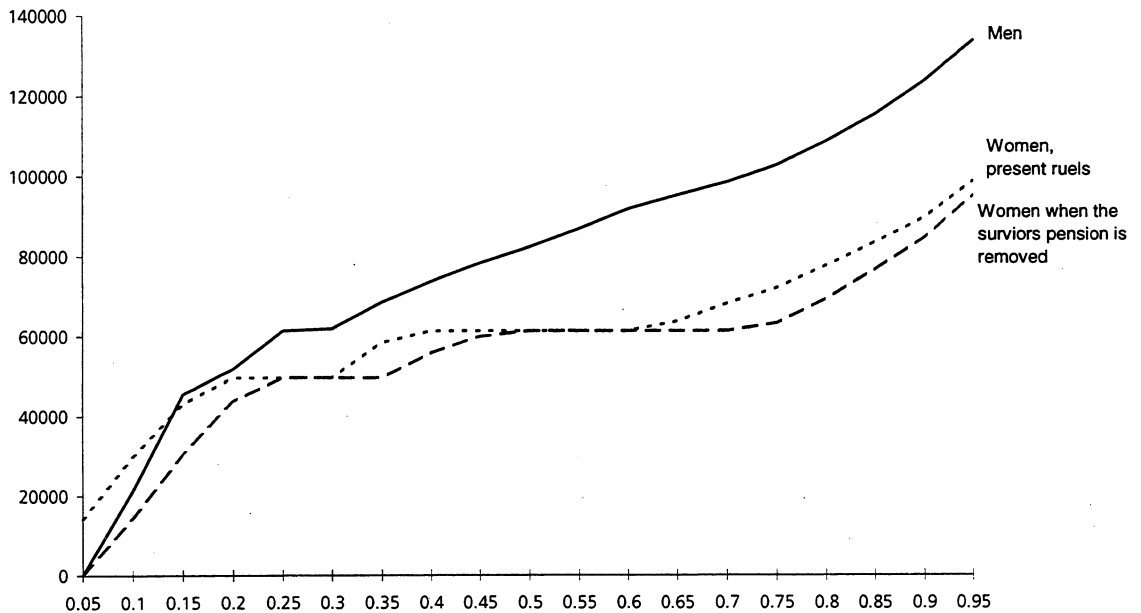
	million kroner	percent of total
Reduction in Payment from the National Insurance:	3 574	3.0
Reduction in Taxes paid:	980	1.5
A total saving of:	2 594	

### 3.2. Changes in the distribution of pensions from the National Insurance and disposable income

Changes in pensions will affect disposable income for pensioners, and men and women will be affected differently. Receivers of survivor's pensions are mostly women, for three reasons: Women live longer than men, marry men that are older than themselves and thus there are more widows than widowers. Men have higher earned own pensions than women, and hence they will less often choose survivor's pensions rather than their own, higher, pension.

Figure 2 shows the pensions of men and women for deciles of the population of men and women who receive pensions from the National Insurance. For women, the pensions with the present system and the pensions they would have received if the survivor's pensions were removed, are shown in the figure. For men, the two cases give (almost) the same level of pensions.

**Figure 2.** Pensions in deciles for men and women before and after removing the survivor's pension. Men and women with pensions from the National Insurance. Kroner



As figure 2 shows, there are substantial reductions in women's pensions in almost all deciles of the female population. The most substantial reductions are felt by women in the lowest deciles. Except for an interval around the first quartile and the median, there are substantial reductions in the pensions for women, especially in the lowest deciles. In fact, women in the lowest deciles now have higher pensions than men, due to inherited survivor pensions, while removing this benefit implies that women get lower pensions than men in all deciles. For women with higher pensions, removing the survivor pension leads to a reduction in their average pension levels from about 77 percent to 70 percent of pension levels for men. For men, the effects are negligible. The loss of pensions leads to a reduction in disposable income, the loss of pension from the National Insurance (and other pensions, such as state-employee pensions) leads to lower gross incomes, but also a reduction of taxes. Disposable incomes are reduced, the effects are negligible for men but substantial for women.

Figure 3 shows disposable income for men and women who receive pensions from the National Insurance, with and without survivor's pensions. Removing survivor pensions will shift disposable income for women down throughout all deciles.

**Figure 3.** Disposable income in deciles for men and women before and after removing the survivor's pension. All men and women. Kroner

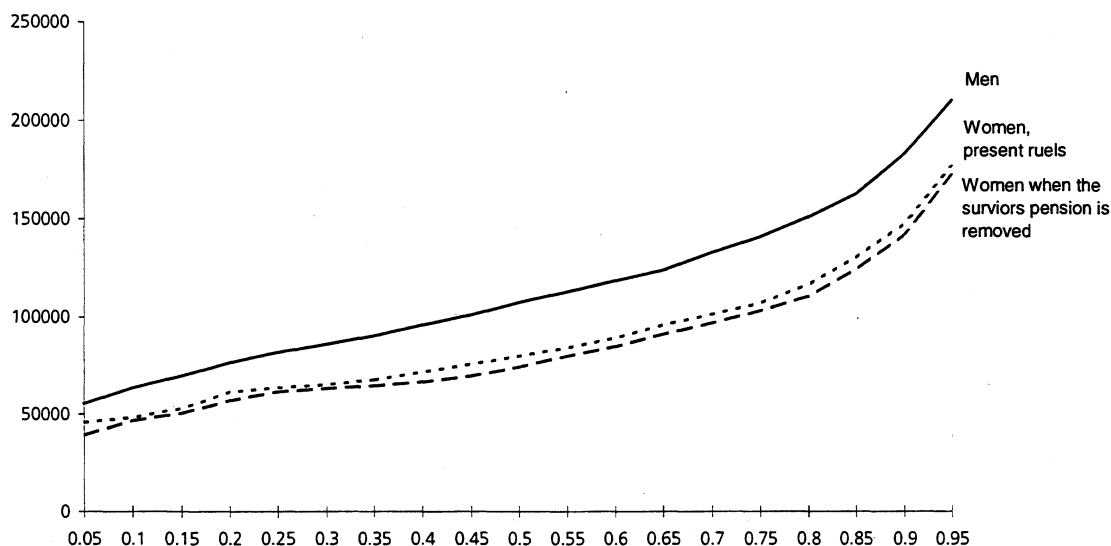


Table 2 shows the average reductions in pension and disposable income for men and women if survivor's pensions are removed. The reductions are, on average, much larger for men than for women.

**Table 2.** Average pension and disposable income for men and women after removal of the survivor's pension. Kroner

	Men	Women
Average reductions in pensions:	264	5 293
Average reductions in disposable income:	326	4 716

Tables 3 and 4 show the level and reduction in pensions and disposable income, in the present situation and if the survivor's pension were removed for all men and women. Disposable income is lower for women than for men, on average 67% of disposable income for men. This reflects that wage income, entrepreneurial income and capital income as well as pensions are lower for women.

**Table 3.** Level of and reduction in pensions when removing the survivors benefit. All men and women. Kroner and percent

	Men	Women	Women in % of men
Pension, including survivor's pension	15 155	17 948	118
Pension, survivor's pension removed	15 104	16 387	108
% change in pension	- 0.3	-8.7	

**Table 4.** Level of and reduction in disposable income when removing the survivors benefit. All men and women. Kroner and percent

	Men	Women	Women in % of men
Disposable income, including survivor's pension	117 051	78 238	67
Disposable income, survivor's pension removed	116 989	76 841	66
% change in pension	- 0.05	-1.8	

Women have, on average, higher pensions than men, but substantially lower disposable incomes. The reason why women have higher average pensions than men, is that a larger proportion of women than men are pensioners, partly because women live longer than men. A removal of the survivor's pension will reduce the average pension for women with 8.7 percent, a substantial reduction. There is a slight reduction in the pensions received by the men, only 0.3 percent.

The reductions in disposable incomes are smaller, 1.8 percent for women and 0.05 percent for men. This is not a substantial reduction in the disposable income for men and women. However, rather than the average levels for the whole population, the effects on those affected can be large.

Tables 5 and 6 show pensions and disposable incomes for men and women who receive pensions from the National Insurance, in the present situation and if the survivor's pension is removed. Going from the total sample of all men and women to the group who receive pensions from the National Insurance, we see that the difference in pensions between women and men is considerably larger and that the effect for women of removing survivor pension is much stronger.

**Table 5.** Level of and reduction in pension when removing the survivors benefit. Men and women receiving pensions from the National Insurance. Kroner and percent

	Men	Women	Women in % of men
Pension including survivor's pension	79 364	60 825	76.5
Pension, survivor's pension removed	79 099	55 532	70
% change in pension	- 0.3	-8.7	

**Table 6.** Level of and reduction in disposable income when removing the survivors benefit. Men and women receiving pensions from the National Insurance. Kroner and percent

	Men	Women	Women in % of men
Disposable income including survivor's pension	120 022	90 467	75.5
Disposable income survivor's pension removed	119 679	85 749	71.5
% change in pension	- 0.3	- 5.2	

When looking at the men and women receiving pensions from the National Insurance, it is clear that women receive a lower average pension and disposable income than men. The reduction in disposable income when removing the survivor's pension is 5.2 percent for men and 0.3 percent for men. For women receiving pensions from the National Insurance, removing the survivor's pensions will reduce their disposable income not insubstantially.

### 3.3 Pensions and marriage

The survivor's pensions are dependent on the work-pattern of the deceased spouses, but the pensioners own work history determines the pension rights women have earned on their own. Only married persons whose spouse have died, receive survivor's pension, and the work patterns of women are highly dependent of marriage status. Thus it is important to differentiate between married and non-married women when we wish to study the effects of removing the survivor's pensions.

The purpose of the calculations presented in this section in the paper is to compare the levels of pensions and disposable income between groups, and study how a removal of the survivor's pension will change the relative positions of the different groups. We also want to take a closer look at what happens to a woman whose husband dies, when she receives survivor's pensions and when the survivor's pension is removed.

As the survivor's pensions are means-tested, the actual pensions reflect the past and present income as well as pension rights. In order to focus on pension rights rather than actual pension, the first set of tables, table 7 and 8, are calculated as if there were no income-testing. The tables show persons who receive pensions from the National Insurance and are 67 to 74 years of age. In restricting the analysis to this age group, we avoid generation-effects.

**Table 7. Men of age 67-74, with pensions from the National Insurance. Present rules. Kroner**

	Pension from National Insurance	Disposable income	No. of persons
Single	80 794	113 934	18 698
Married	94 820	133 658	103 485
Widower	95 784	115 104	12 910
Divorced	92 399	122 494	6 851
Separated*	111 983	178 334	160

\*There are too few observations in the sample to yield a reliable estimate.

**Table 8. Women of age 67-74, with pensions from the National Insurance. Present rules. Kroner**

	Pension from National Insurance	Disposable income	No. of persons
Single	70 298	85 911	15 864
Married	56 053	64 253	83 006
Widow	76 474	97 573	65 978
Divorced	74 305	88 803	5 996
Separated*	61 404	70 527	78

\*There are too few observations in the sample to yield a reliable estimate.

Married men have pensions and disposable income that are higher than those for single and divorced men. Widowers have an even higher disposable income. Among the women, however, the widows have the higher pensions and disposable income, while single women have lower pensions and disposable income and married women have far lower pensions and disposable incomes. This may indicate that while men who are married seem to gain economically from their spouse, women seem to lose. The married women have worked less than unmarried women, and thus have lower pensions. Their standards of living are probably far higher than their incomes indicate, as they are married to relatively well-off men, and share his income.



The widows receive survivor's pensions, and this gives them high pensions and high disposable incomes. Thus, when their husbands dies, the standard of living of the widows is not substantially reduced.

In order to study the effects of survivor's pensions, pensions from the National Insurance and disposable income when there are no survivor's pension has been calculated. The income-testing has been removed as well.

**Table 9.** Men of age 67-74, with pensions from the National Insurance. No survivor's pensions. Kroner

	Pension from National Insurance	Disposable income	No. of persons
Single	80 794	113 933	18 698
Married	94 820	133 658	103 485
Widower	95 061	113 166	12 910
Divorced	92 399	122 494	6 851
Separated*	111 983	178 334	160

\*There are too few observations in the sample to yield a reliable estimate.

**Table 10.** Women of age 67-74, with pensions from the National Insurance. No survivor's pension. Kroner

	Pension from National Insurance	Disposable income	No. of persons
Single	70 298	85 911	15 864
Married	56 053	64 253	83 006
Widow	63 767	85 223	64 942
Divorced	74 304	88 802	5 996
Separated*	61 403	70 526	78

\*There are too few observations in the sample to yield a reliable estimate.

The pensions of the widowers are reduced only slightly as an effect of removing the survivor's pensions. For the widows, however, the situation is changed dramatically. Their disposable income is reduced by more than 10 000 kroner, or more than 10 percent of her disposable income with survivor's pension. Still, the widow has a pension that is far higher than the pension of the married woman, although lower than that of the single woman.

Even after removing the survivor's pensions, the widows are better off than married women. This must reflect the fact that widows have had a more extensive work history than married women, and this illustrates an important fact: the widows in the tables are a highly heterogenous group, some were widowed at an early age and have perhaps had a work pattern similar to that of an unmarried woman.

To get a better picture of what happens, let us tak a look at a married woman of the age of 67 who loses her husband and gets the survivor's pension in addition to her her own pension. She has a pension of her own that is approximately 56 000 kroner, and when receiving the survivor's pensions she will probably receive somewhat more than 76 500 kroner in pensions. If, however, the survivor's pension is removed, she will have to make do with the 56 000 kroner she has the right to on her own.

If a married man becomes a widower, he may experience a slight increase in his pension, if his wife had earned enough during her working years. She had a lower income, so that he is financially better off after her death, eaven if survivor's pensions are removed.

### 3.4. Effects on inequality

Changes in income distribution lead to changes in inequality, and using the inequality program, we have estimated inequality measured by the Gini coefficient. Although this does not give a thorough and complete description of the effects of survivor's pensions on inequality, it will give some indications about the changes in inequality when survivor's pension is removed.

Tables 11 and 12 shows the effects on the Gini coefficient of inequality in the distribution of pensions and disposable income for all men and women of removing the survivor's pension.

**Table 11.** Level of and reduction of the Gini coefficient (G) of inequality in the distribution of pensions. All men and women

	Men	Women	Women in % of men
G of pension, including survivor's pension	0.85857	0.76627	89.15
G of pension, survivor's pension removed	0.86009	0.77625	90.25
% change in G	0.0605	1.3024	

**Table 12.** Level of and reduction of the Gini coefficient (G) of inequality in the distribution of disposable incomes. All men and women

	Men	Women	Women in % of men
G of disposable income, including survivor's pension	0.48206	0.47562	98.66
G of disposable income, survivor's pension removed	0.48206	0.48056	99.69
% change in G	0	1.0386	

There is lower inequality among women than among men, this is particularly noticeable in the distribution of pensions. If the survivor's pension is removed, the inequality among women will increase with more than 1 percent. For men there will be a slight increase in the inequality of pensions, while the inequality in the distribution of disposable income is unchanged.

Tables 13 and 14 show the inequality for men and women in the present situation and when the survivor's pensions are removed, for men and women receiving pensions from the National Insurance.

**Table 13.** Level of and reduction of the Gini coefficient (G) of inequality in the distribution of pensions. Men and women with pensions from the National Insurance

	Men	Women	Women in % of men
G of pension, including survivor's pension	0.26458	0.20794	78.59
G of pension, without survivor's pension	0.2673	0.24175	90.44
% change in Gini coefficient	1.0280	16.2595	

**Table 14.** Level of and reduction of the Gini coefficient (G) of inequality in the distribution of disposable incomes. Men and women with pensions from the National Insurance

	Men	Women	Women in % of men
G of disposable income, including survivor's pension	0.25334	0.24213	95.58
G of disposable without survivor's pension	0.25317	0.24975	98.65
% change in Gini coefficient	-0.0671	3.1471	

Gini coefficients are lower for women than for men, before and after removing survivor pensions, both for pensions and disposable income. For the whole population we see that the distribution of pensions is much more unequal than the distribution of disposable income. The reason for this is that relatively few persons are pension recipients as compared to all income earners. For both men and women the effect of removing survivor pensions is that the Gini coefficient increases. When we consider the whole population, the effect of removing survivor's pension is negligible for both men and women.. For the group with pensions, however, removing the survivor pensions leads to an increase in inequality for women by 16.26 percent. An explanation is that survivor pension increases pension for women in lower deciles, and thus has a favorable effect on income distribution. The effect on inequality for men is negligible.

#### **4. Concluding remarks**

Survivors pensions benefit women who would otherwise have the right to low pension based on their own work-history. Removing the survivor's pensions will reduce pensions and disposable incomes for women, and increase the inequality between men and women. If the survivor's pension is removed, inequality in the distribution of pensions and disposable income will increase slightly. Even if the effect for all men and women, or even men and women receiving pensions from the National Insurance are not very big, the effects for widows are substantial. Widows can lose as much as 17 percent of their pensions if the survivor's pension is removed. The average woman becoming a widow at the age 67-74 stand to lose much more, probably more than 27 percent of her pension if the survivor's pension were removed (calculated from tables 10 and 8).

These calculations were done for 1994, and we have seen that effects of removing the survivor's pension are relatively small. The importance of survivor's benefits will increase in the future years, however, as the men's supplementary pensions increase. The effects of removing the survivor's pension will be significantly larger in the future years. For an analysis of future pension burdens in Norway, see Andreassen, Fredriksen and Ljones (1994).

An important question is what will happen if the survivor's pension is removed - will widows, and even married women start working more in order to earn more money and pension rights, will widows have to rely on disability pensions and social assistance, or will she simply remain very poor? These questions are not answered in this paper, although answering them is clearly necessary in order to fully grasp the consequences of removing the widowers pension.

This question of whether the individual or the household is the right unit to take into account, one must also consider at what level the decisions are made. If the family or household takes decisions more or less as a single unit, it may seem unsatisfactory to not take this into account when pensions and benefits are determined. Consider a «traditional» household where the woman is at home looking after her husband and children, occupied with household production. The family share her household production just as they share her husband's money income. She makes it possible for him to have a family and still work full time, earning money and pension rights. If he dies before her, she has no pension rights from their joint production, while he receives full pension right for his production. If they decide to specialize in this way (the efficient way, according to Becker) why should not she share his pension points? Perhaps other alternatives than inheritance of pensions can be envisioned, e.g. an extension of the care credit system.

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