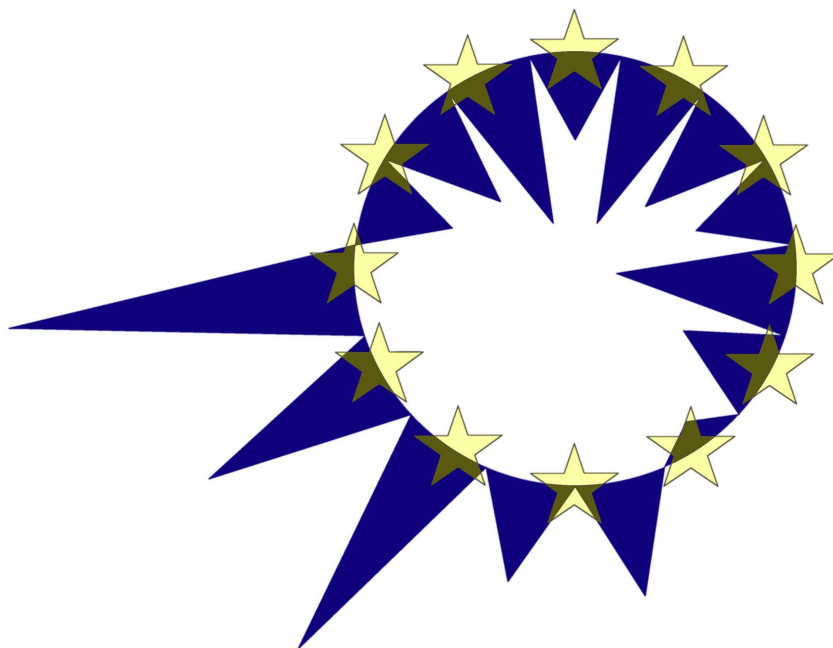


# **EUROMOD**

## **COUNTRY REPORT**



EUROMOD Country Report

**DENMARK**

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# **EUROMOD COUNTRY REPORT FOR DENMARK**

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*June 2001*

# **1. DANISH TAX/BENEFIT RULES**

## **1.1 Preface**

According to the role of country correspondents in the Euromod project, please find below a description of the rules for Danish housing benefit, unemployment benefit, early retirement, family allowance and child benefit, old-age pension, disability pension, parents' payment for day care for children, social assistance and personal taxation for 1998. The schemes described are those simulated in the Danish 'part' model in Euromod (except early retirement). The descriptions are not very detailed, but have been adjusted to what is possible to obtain by using ECHP data, which are the basis for the Danish 'part' model. This basis is much less detailed than the register data used for the Danish Law Model, which also gives much more precise results.

The schemes simulated in the Danish 'part' model are the major ones. The following benefits schemes are not covered: Sickness benefits, Maternity benefits, Paid leave schemes, Industrial injuries, Rehabilitation schemes and Student grants. Benefits received when participating in active labour market measures are basically covered by Unemployment benefits and Social assistance. Usual wages are received for shorter sickness spells and to some extent also during maternity leave, so omission of these two schemes is not a major problem.

## **1.2 Danish Housing Benefit Rules 1998**

### **1.2.1 Introduction**

There are four components of the Danish housing benefit scheme: 1 H.B. for families in their working ages, 2 H.B. for pensioner families (i.e. is a family with at least one member receiving a Danish social pension). 3 loans for families entering a rented accommodation in building associations and 4 special rules for families in dwellings under renovation. Only 1 and 2 will be dealt with here, because 3 and 4 cannot be identified in the ECHP data.

### **1.2.2 H.B. for families in their working ages**

#### *Eligibility*

All families in their working ages (i.e. no member of the family is a recipient of social pension) living in a rented accommodation with kitchen installations of its own. The family has to live in Denmark.

#### *Entitlements*

The actual benefit for a family depends upon:

1. The rent and the size (in m<sup>2</sup>) of the dwelling.

2. The size of the family, in particular whether there are children or not.

3. The income of the family.

Rent: It is the 'pure' rent excluding costs for heating, electricity and water (and some other items) which is the basis. If the heating installation is of a specific type, i.e. electric, gas or distant heating there is an addition to the basis of 19.50 DKK per m<sup>2</sup> (annual basis). If the family is totally responsible for internal maintenance of the dwelling there is another addition of 38.50 DKK per m<sup>2</sup>, if the obligation is only partial the addition is 19.25 DKK per m<sup>2</sup>.

The pure rent plus the possible additions constitute the calculated rent. This is calculated in DKK per m<sup>2</sup> on an annual basis. If one person is living in the dwelling the rent for 65 m<sup>2</sup> is the maximum which can enter the H.B. calculation. For each additional family member 20 m<sup>2</sup> are added to reach the maximum. If there is a disabled person in the family the basic maximum is rent for 75 m<sup>2</sup> for the first person.

The 'entitlement' rent is calculated according to the specified rules. The maximum 'entitlement' rents in 1998 are:

0 children	53,300 DKK
1 child	55,965 DKK
2 children	58,630 DKK
3 children	61,295 DKK
4 children or more	63,960 DKK

If the 'entitlement' rent is below or equal to the maximum it just enters the H.B. calculation, if it is above it is the maximum which enters the calculation.

Family size: As already mentioned, the family size has, through the m<sup>2</sup> rule, influence on the 'entitlement' rent. It also has influence on the family income deciding the own payment. The income above 13,400 DKK (annual basis) of any child enters the family income, cf. the following section for the income concept used. It is also so that there is a deduction in family income of 25,500 DKK (annual basis) per child independent of any income of the child. Children living with their parents and who are less than 23 years of age are counted as children where H.B. is concerned, the usual upper age limit for being a child is 18 years. Finally, families with no children have a special max. limitation on the H.B. they can receive, i.e. 15 % of the 'entitlement' rent.

Family income: Basis for calculation of the own payment is family income. The personal income and any positive net capital income of each family member is added to reach family income (for an exact definition of these concepts cf. the section on personal taxation). The rules for children are applied to family income and the 'entitlement' income is calculated. The own payment is 16 % of 'entitlement' income up to an 'entitlement' income of 144,600 DKK. For 'entitlement' income above that threshold the own payment is 26 2/3 %, the own payment follows a progressive schedule. The minimum own payment is 8,100 DKK (annual basis).

H.B. calculation: The general rule is that H.B. equals 75 % of the difference between the 'entitlement' rent and the own payment. The calculated H.B. is rounded up or down so it is divisible by 12. The calculated H.B. has the following limits:

No children	15 %
1 to 3 children	28,116 DKK
4 children and more	35,145 DKK

The 15 % is of the ‘entitlement’ rent. The threshold (smallest possible) H.B. is 2,064 DKK (annual basis).

### ***Taxation***

H.B. is non taxable income, and is not included in the base for other benefits.

### **1.2.3 H.B. for pensioner families**

#### ***Eligibility***

All families where at least one member is a recipient of social pension (old-age pension or disability pension) living in a rented dwelling, a cooperative dwelling or an owned dwelling. H.B. for families in owned dwellings will not be dealt with here. There are not many recipients of this type, the benefits are loans, and there is no information in the ECHP data to construct the ‘entitlement’ housing costs. Families in cooperative dwellings will be treated as families in rented dwellings. This is not strictly correct (40% is as grants, 60 % as loans), but for marginal analyses it is acceptable. The family has to live in Denmark.

#### ***Entitlements***

The benefits again depend upon:

1. The rent and the size (in m<sup>2</sup>) of the dwelling.
2. The size of the family.
3. The income of the family.

Rent: The ‘entitlement’ rent is calculated in exactly the same way as for families in their working ages, except that only 90% of the amount enters the H.B. calculation. There are the same maximum limits to the ‘entitlement’ rent as already mentioned in relation to ‘1 H.B. for families in their working ages’. There is no maximum for families living in special dwellings suited for elderly.

Family size: Family size has the same consequences as mentioned in relation to ‘1 H.B. for families in their working ages’, except that there is no 15 % limitation for families without children. Children are not so important for pensioner families at least not recipients of old-age pension.

Family income: Family income is calculated in the same way as explained in section ‘1 H.B. for families in their working ages’. There is however a deduction in income of 26,200 DKK for single pensioners (pensioners living alone) and 3,100 DKK for other pensioners (cohabiting or married).

The own payment is 10 % of the 'entitlement' income for an income up to 144,600 DKK and 20 % of the income above that threshold. The minimum own payment is 5,100 DKK.

H.B. calculation: The general rule is that H.B. equals 100 % of the difference between the 'entitlement' rent and the own payment. The calculated H.B. is rounded up or down so it is divisible by 12. There are the same maxima as mentioned earlier except that the 1 to 3 children maximum is also valid for families without children. Families living in special dwellings suited for elderly have no maximum. The threshold (smallest possible) benefit is 2,064 DKK.

### ***Taxation***

H.B. is non taxable income, and is not included in the base for other benefits.

## **1.3 Danish Unemployment Benefit Rules 1998**

### ***Introduction***

Danish unemployment insurance is voluntary and also open for self-employed people. It is possible to be insured on a full time basis (30 or more hours of work per week) or part time basis (less than 30 hours per week). Self-employed people can only be full time insured. It is also possible to be combi-insured if a person is both an employee and self-employed, and then receive benefits if he or she is unemployed in e.g. one of the categories. There is a fee for full time membership of approx. 4,000 DKK (annual basis) for employees, 2/3 of that for part time insured. This fee is also paid when unemployed. Only the rules for employees will be dealt with here.

### ***Eligibility for benefits***

Unemployment insurance being voluntary there are some criteria which have to be met before you can join, they concern education, work record and age. The minimum age for joining is 18 years, the maximum 65 years. Eligibility for benefits (full time insured) usually requires 1 year of membership and work in 52 weeks (usual full time hours within the industry) within the last 3 years. Only work after joining the insurance scheme counts. For part time insured the requirement is 34 weeks of work within the last 3 years. It requires 26 weeks of work within 3 years to regain the rights for benefits if they have expired (full time insured).

New-comers (newly educated, apprentices) obtain rights to benefits after membership in 1 month if they joined before 2 weeks after finishing a qualifying education of at least 18 months duration. New-comers receive the minimum benefits, cf. the section on entitlements.

### ***Entitlements***

The benefits are income related, they are 90 % of the former income (3 months) minus the general social contribution of 8 %, cf. the section on taxation for an exact calculation of the base for unemployment benefits. In 1998 the maximum benefit was 538 DKK per day for 5 days a week for a full time insured. There is no waiting period for the recipient. The maximum benefit is reached at a cap of 168,859 DKK (annual basis), a relatively low income by Danish standard, it is approx. 65 % of the income of OECD's APW for Denmark. Most full time insured will also be eligible for the

minimum benefit, which is 82 % of the max. benefit, i.e. 441 DKK per day. The requirement is 3 years membership of the insurance scheme and full time employment in that period. Only full time insured are eligible for the minimum benefit. The minimum income where the 90 % rule is applied is 138,400 DKK (annual basis), for income below that level the minimum benefit will be received if the eligibility criteria are met. The income span where the benefit is income related is quite narrow. The cap and floor are gross income including the 8 % general social contribution. New-comers will also receive the minimum benefit regardless of their former income.

Part time insured will also receive 90 % of their former income (same basis as for full time insured) but with a maximum of 359 DKK per day. There is no minimum for part time insured. If a person is usually working full time, but is only offered part time work after a period of unemployment, it is possible to receive part time benefits to compensate for the missing time up to full time work.

Young unemployed (not new-comers) in the age bracket 18- 25 years receive unemployment benefits on the usual conditions if they meet the educational conditions for being a member of the insurance scheme. If they do not (but are still members according to the work record criterion) they will after 6 months of unemployment have to take a qualifying education of at least 18 months duration. With a solid work record (but still without a qualifying education) job training in the public sector is offered. Young unemployed having to join education will receive benefits according to the levels of other students in that education. This is usually much lower than ordinary U.B. Young unemployed in public job training receive benefits according to the U.B. rules.

The benefit period was 5 years in 1998, two years on benefits and then max. 3 years in activation. In activation it is possible to receive more than U.B. in private job training, for participation in the other active labour market measures the benefits are equivalent to U.B.

If you were unemployed and your rights for U.B. expired after you were 50 years old it was possible to continue receiving benefits until the age of 60 years and then go on early retirement if the eligibility criteria for that scheme were met. After the age of 60 years there is only entitlement for maximum 2½ years of benefits. These are the rules for 1998, they have since (mid 1999) been changed and tightened up. (the benefit period is now 4 years, the '50 year' rule is now a '55 year' rule, all with appropriate transition arrangements).

### ***Taxation***

U.B. is taxable income but the general 8 % social contribution is not paid. Social contributions for supplementary pension (ATP) and the temporary savings scheme (1998) are paid, cf. the section on taxation for further details, as well as for unemployment insurance. U.B. are included in the base for other benefits.

## **1.4 Danish early retirement rules 1998**

### ***Introduction***

The early retirement scheme 'Efterløn' was introduced in 1978. The aim was that worn out workers should have the possibility to retire from the age of 60 years. The official old-age pension

age is 67 years in Denmark (will be lowered to 65 years in 2004), the highest in Europe (together with Norway).

Some very early retirement schemes (from unemployment) were also introduced when unemployment rates were high in the first half of the 1990's permitting early retirement from the age of 50 years. These schemes were closed for new entrants from 1996. In 1994, where the ECHP data have their base, there were approx. 13,000 persons (end of year) in the very early retirement schemes. The rules for these schemes are not covered in the following.

There were also two part time early retirement schemes, one of them starting in 1995, after the ECHP data. The other has less than 5,000 participants. Both will be ignored in the following.

The rules described here will be for the full time early retirement scheme in 1998. This scheme was changed considerably from July 1999, which will have to be considered in any up-date of the Euromod base year (which is 1998 in the first version).

### ***Eligibility***

Eligibility for early retirement depends on age and membership of the unemployment insurance scheme. The minimum age for early retirement is 60 years and the U.B. insurance membership requirement was 20 years out of the last 25 years (changed to 25 years out of the last 30 years from July 1999). Eligibility for unemployment insurance benefits at the time of early retirement is also a requirement. A social pension cannot be received at the same time. There are no requirements about replacements in the job and there are no requirements about agreement with the employer. Unemployed meeting the criteria are also eligible for early retirement. Participants in the now closed (for new entrants) scheme for very early retirement can continue in the ordinary early retirement scheme when they reach the age of 60 years.

### ***Entitlements***

For the first 2½ years the early retiree is entitled to his or her unemployment insurance benefits, cf. that section, with the usual maximum of 538 DKK a day or 139,880 DKK a year. For part time insured in relation to unemployment insurance (but still 'full time' early retirees) the maximum will be 2/3 of this amount.

After 2½ years in 'step 1' the benefit might be reduced (it will for most participants) to maximum 82 % of the mentioned maxima.

If you postpone the early retirement until the age of 63 you are entitled to 'step 1' benefit levels for the whole period in early retirement, which, according to the 1998 rules, is until you are 67 years old.

There is a right for 200 hours annual work without any reductions in the benefits.

### ***Taxation***

**Early retirement benefits are taxable, but the general 8 % social contribution is not paid, but contributions for the temporary pension scheme and**



**unemployment insurance are paid (U.B. insurance contribution is 50 % of the usual rate). ATP contributions are voluntary. Early retirement benefits are included in the base for other benefits.****1.5 Danish Family Allowance and Child Benefit rules 1998**

### ***Introduction***

The family allowance scheme is general, it covers practically all families with children.

The child benefit scheme is for special groups, e.g. single parents and pensioners with children. It is a supplement to the general scheme for these groups.

## **1.5.1 Family allowances**

### ***Eligibility***

All families with children in the age bracket 0-17 years (both ages included) are eligible. The parent (s) having custody of the child has (have) to be fully taxable in Denmark and the child has to live in Denmark and be non married. The allowance is usually paid to the mother unless she does not have the custody of the child, then it is the father or the family taking care of the child. It can also, in exceptional cases be the child.

### ***Entitlements***

The family allowance is a flat rate benefit. It is highest for the youngest child. The rates in 1998 were:

Age of child	Annual basis
0-2 years	11,000 DKK
3-6 years	10,000 DKK
7-17 years	7,800 DKK

### ***Taxation***

Family allowance is non taxable income and is not included in the income base for other benefits.

## **1.5.2 Child benefits**

### ***Eligibility***

The child or the parent having custody of the child will usually have to be a Danish citizen. The benefits are for special groups mentioned under entitlements. The payment is according to the same rules as mentioned under family allowances.

## ***Entitlements***

There are 4 types of benefits. One is the 'ordinary benefit', which is paid to single parents and families where both parents receive a social pension (primarily disability pension). It is a flat rate benefit paid for each child.

The second is the 'extra benefit', a flat rate benefit paid to the single parent family, one benefit per family.

The third is the 'special benefit', which is paid to all groups, i.e. single parents (only if child alimony is not paid by the other parent), families where one of the parents receive a social pension (only if the parent receiving a social pension is not being paid child alimony by the other parent), families where both parents receive a social pension (primarily disability pension), orphans (higher rate), spouse of deceased (where the deceased had the custody of the child) who adopts the child or a single who adopts the child, mothers where the father of the child is unknown. The 'special' benefit is a flat rate paid per child.

The fourth is the 'multi child benefit' which is paid to the first 4 groups mentioned above in case of twins etc. It is a flat rate benefit paid per child.

All child benefits are paid for children in the age bracket 0 - 17 years (both included) except the 'multi child benefit' which is paid in the age bracket 0 - 6 years.

The rates for 1998 for the 4 types of child benefits are as follows :

Ordinary benefit (per child)	Annual basis 4,644 DKK
Extra benefit (per family)	3,548DKK
Special benefit (per child)	8,904 DKK
Orphan rate	17,820 DKK
Multi child benefit (per child)	5,740 DKK

## ***Taxation***

Child benefits are non taxable income and they are not included in the base for other benefits. The child alimony above the special benefit is taxable for the child.

## **1.6 Danish Old-age pension**

### ***Introduction***

The Danish old-age pension scheme is a tax financed pay as you go scheme which is residence based, i.e. how much you get in pension depends upon the length of the stay in the country, not your former income or contribution record. Almost all Danes will receive a full pension (unless means tested) because they have stayed in Denmark for 40 years since the age of 15 before they retire at the age of 67 years. This age limit will be lowered to 65 years from 2004. Early retirement from other schemes have no influence on the old-age pension. There is no flexibility in the scheme, you cannot take the pension out earlier and there is no premium for delaying the retirement. You can of course refuse to receive the pension (or not return the application which every 67 year old eligible person receives from the municipality).

### ***Eligibility***

The main requirements are Danish citizenship and for a full pension 40 years stay in Denmark since the age of 15 years (else the pension will be on a pro rata basis). There are exemptions and special rules according to 1408 and other conventions, these will not be covered here. The official retirement age in 1998 is 67 years.

### ***Entitlements***

The residence based Danish old-age pension consists of 4 flat rate benefits in 1998. There is a 'basic amount' of 46,812 DKK (annual basis) which is received by all pensioners (except when it is tapered to 0), a 'supplement' which is 39,576 DKK for singles and 20,568 DKK for married persons (both can be means tested) and a 'special supplement' of 6,828 DKK for singles (not means tested). Cohabitants are treated as married persons as far as pension rates are concerned. For tapering the rules for singles are applied.

The full pension is then 93,216 DKK for a single in 1998 and 67,380 DKK for a married person (a pensioner couple will receive 2 times 67,380 DKK).

The basic amount is means tested against own income and only income from personal work. If the income from work is more than 176,100 DKK (annual basis) for singles (134,900 for married persons) the basic amount will be tapered by 60 per cent of the income above the threshold. The base is personal income from work, cf. an exact definition in the section on personal taxation. The basic amount is tapered to 0 when the base income reaches 254,100 DKK for a single and 212,900 DKK for a married person.

The supplement is means tested on basis of own income, and if the person is married, also on basis of income of the spouse (but not from children). If the pensioner is married to a non pensioner there will be a deduction of 10,000 DKK in the income of the spouse before it enters the base for means testing. Basis for the means testing is personal income plus positive net capital income (disregarding the old-age pension itself), cf. the section on personal taxation for an exact definition.

The means testing of the supplement starts at 43,900 DKK for a single and 88,000 DKK for a married person. The taper is 30 per cent for income above the thresholds. For couples where both spouses are old-age pensioners the taper is 15 per cent for each.

For singles the supplement is tapered to 0 when the base income reaches 175,800 DKK, a little below the threshold for tapering of the basic amount (but here the base income is different). For a married person the supplement is tapered to 0 at a base income of 156,500 DKK. For a couple, where both are old-age pensioners there are two supplements, which will be tapered to 0 when the base income reaches 225,100 DKK.

For married persons it is possible to have simultaneous tapering of the basic amount and the supplement, resulting in a very high combined marginal effect, which, however, is reduced by a fall in taxation of the reduced pension. The effective tapers are approx. 50 per cent of the nominal ones.

There is room left for tapering of personal supplements before the tapering of the supplement starts at 43,900 DKK for singles and 88,000 DKK for married persons. The personal supplements are given according to need. It could be to cover heating costs. The tapering of such supplements start at a base income of 11,500 DKK for singles and 23,100 DKK for married persons. The taper increases by 1 percentage point for each 300 DKK the base income for a single is above the threshold of 11,500 DKK. For a married person it is for each 600 DKK the base income is above the 23,100 DKK threshold.

### ***Taxation***

The old-age pension is taxable income and there are no special deductions or allowances in the tax scheme for old age pensioners. There are no social contributions to be paid from old age pensions.

## **1.7 Danish disability pension**

### ***Introduction***

Danish disability pension is related to the old-age pension scheme in the sense that it is residence based and share the basic rates with the old-age pension scheme. Receiving disability pension has no influence on the size of the old-age pension which replaces the disability pension when the recipient becomes 67 years (65 years from 2004). Danes receiving disability pension will almost always receive a full pension (graduated according to the loss of working capability) because they have stayed long enough in the country.

### ***Eligibility***

There are two criteria for eligibility. One is the length of the stay in the country, the other is the loss of working capability. The 'stay' criterion is: In order to receive a full pension the recipient is required to have stayed in the country 4/5 of the 'theoretical' stay, i.e. the time from the 15th year to the start of the pension payment. If the actual stay is shorter than that, the pension is calculated as the share of a full pension determined by the fraction resulting from dividing the length of the actual stay by 4/5 of the 'theoretical' stay as defined above.

The loss of working capability criteria are:

When the working capability, because of health problems, is completely or almost completely lost at a permanent basis, the person is eligible for disability pension at the highest level if the person is between 18 and 59 years old (both included). If persons between 60 and 66 years meet the criteria for the highest level disability pension they will receive the middle level pension as first time pensioners. Persons having received the highest level will continue at that level until old-age pension, i.e. 67 years of age in 1998.

When the working capability, because of health problems, is permanently reduced by  $\frac{2}{3}$  the person is eligible for disability pension at the middle level if the person is between 18 and 59 years old (both included). If persons between 60 and 66 years meet the criteria for the middle level pension they will receive the ordinary level pension, cf. below.

Eligibility for pension at the augmented ordinary level is obtained in 3 ways:

1. When the working capability, because of a health problem, is permanently reduced by  $\frac{1}{2}$  and the person is between 18 and 59 years old.
  2. When the working capability, due to health and social problems, is permanently reduced by  $\frac{1}{2}$  and the person is between 18 and 59 years old. A pension according to these criteria can only be received if the gross income of the person is below 93,184 DKK (annual basis) if he or she is single or 139,776 DKK for a married couple if the person is married. Both limits are increased by 8,904 DKK per child under 18 years living at home.
  3. For persons between 50 and 59 years with a permanent need for financial support (social reasons). The income limitations are the same as mentioned under 2.
- If social criteria are also used an assessment will be made every 5th year if the person was below 50 years of age when first receiving the pension in order to see if the criteria are still met.

Eligibility for pension at the ordinary level is obtained in 3 ways:

1. When the working capability, because of health problems, is permanently reduced by  $\frac{1}{2}$  or  $\frac{2}{3}$  and the person is between 60 and 66 years of age (the ' $\frac{2}{3}$ ' criterion is for the middle level pension but not for 60-66 year old persons, cf. above).
2. When the working capability, because of health and social problems, is permanently reduced by  $\frac{1}{2}$  and the person is between 60 and 66 years of age. The earlier income limitations are also valid in this case.
3. When permanent financial support (social reasons) is needed for persons between 60 and 66 years old. The income limitations are also valid here.

If a person is eligible for pension at the highest or at the middle level (health reasons) but is still capable of earning a substantial income, he or she will be eligible for a special benefit, cf. later.

There are two supplements (not unlike the British 'Disability Living Allowance') which can be received if special care (not able to be alone) or special help at unusual times is needed.

It should be emphasized that all attempts on rehabilitation and return to the labour market should be exhausted before a pension is granted.

## *Entitlements*

The pensions consist of a series of flat rates which are listed below, 1998 level, annual basis:

	Single	Married	Taxable	Tapered
1. Basic amount	46,812	46,812	yes	yes
2. Supplement	39,576	20,568	yes	yes
3. Special supplement	6,828	0	yes	no
4. Invalidity amount	22,776	22,776	no	no
5. Incapacity amount	31,428	31,428	yes	no
6. Augmentation	11,892	11,892	no	no

Cohabitants are treated as married persons as far as pension rates are concerned. For tapering the rules for singles are applied.

Pension at the highest level: 1-5, in total 147,420 DKK for a single and 121,584 DKK for a married (cohabiting) person. If both spouses receive 4 it will be 19,392 DKK for each, if both receive 5 it will be 22,740 DKK for each.

Pension at the middle level: 1-4, in total 115,992 DKK for a single and 90,156 DKK for a married (cohabiting) person. If both spouses receive 4 it will be 19,392 DKK for each.

Pension at the augmented ordinary level: 1-3 + 6, in total 105,108 DKK for a single and 79,272 DKK for a married (cohabiting) person.

Pension at the ordinary level: 1-3, in total 93,216 DKK for a single and 67,380 DKK for a married (cohabiting) person.

The person who is eligible for pension at the highest level or at the middle level but has a substantial earned income will receive a special benefit of 22,896 DKK (annual basis) which is neither taxable nor tapered. If both spouses in a couple receive this benefit it will be 18,600 DKK for each.

The two supplements mentioned in the section on eligibility are 23,784 DKK (annual basis) for special help and 47,460 DKK for special care. Neither are taxable nor tapered. Recipients of these benefits can usually keep them, also when they become old-age pensioners.

Tapering of the basic amount and the supplement is similar to the rules for old-age pension. The basic amount is tapered against own income, but the income concept is broader than for old-age pension, cf. the section on personal taxation for an exact definition. The supplement is tapered against own income and possible income from the spouse. The income concept is personal income plus positive net capital income, cf. the section on personal taxation for an exact definition. The

tapers and the thresholds are the same as mentioned for old-age pension also for tapering of the personal supplements for e.g. heating.

### ***Taxation***

The taxation of components of the disability pension is marked in the table on page 10. Some items are taxable and some are not. There are no special allowances for disability pensioners in the tax scheme. There are no social contributions to be paid from disability pension.

## **1.8 Danish Day care for children, parents' payments**

### ***Introduction***

Public day care for children is wide spread in Denmark, one of the reasons being high labour market participation among women with children. The Danish municipalities are in charge of public day care. There are basically three types of day care: nurseries for infants (0 - 2 years), kindergarten for children from 2 years to school age and family day care (primarily for infants), which is run by private persons in their homes under supervision from the municipality.

### ***Eligibility***

Public day care for children is open for all families with children, but in some cases a shorter or longer waiting period has to be accepted. The parents will have to pay for day care. The norm payment is 30 per cent of the costs of the institution (calculated in a specified way) or the average cost of institutions of the same kind in the municipality. The norm payment can be subsidized by the municipality to a lower percentage than 30. There is considerable variation across the municipalities as far as costs and subsidies for norm payments are concerned. The actual rates for the children reflects this variation. The average rate for nurseries was 2,256 DKK/month/child (1998), for kindergarten it was 1,254 DKK/month/child (1998) and for family day care it was 1,728 DKK/month/child (1998). There is a rebate for siblings attending day care in the municipality. The highest rate is always paid in full, but only 50 per cent of the other rates are paid. It is possible for the municipality to increase the rebate to above 50 per cent.

### ***Entitlements***

Handicapped children may pay half rate, and if they are in part time care there is no charge at all.

Families with income below a certain level do not pay for day care for their children, they receive a subsidy equal to the rate. This subsidy is gradually tapered to 0 with increasing income and from a certain income level the full rate is paid.

The income concept used is family income, it is personal income plus positive net capital income, cf. the section on personal taxation for an exact definition. The following percentages of the rate (s) are paid at different income levels in 1998.

Annual income	Payment in pct. of full rate
Up to 103,000 DKK	0
103,001 - 104,139 DKK	5
104,140 - 211,200 DKK	increase by 1% for every 1,139 DKK
211,201 DKK and above	100

The income thresholds are increased by 7,000 DKK for each child, after the first, living at home.

From 1999 the upper boundary is increased to 328,701 DKK, also implying a significant increase in the step augmenting the pay percentage by 1 point.

### ***Taxation***

The subsidy is not taxable income and has no influence on other benefits.

## **1.9 Danish social assistance**

### ***Introduction***

This is a very comprehensive and very complex set of rules, why the following only covers the more general aspects and primarily social assistance as a compensation for lost income. Social assistance is also the scheme for rehabilitation, an aspect not covered here, and day care for children (already covered). There are also special rates (lower) for emigrants and refugees for the first 3 years of their stay in Denmark, after permission has been obtained. This discrimination was challenged by UNCHR, and has now been removed.

Social assistance is, as in most other countries, a last resort benefit. It is not a guaranteed minimum income. If a person is earning (by work) an income which is lower than the social assistance level there is no 'topping-up'. There might, however, be in couples where one spouse has a low earned income while the other is unemployed, cf. later. A person receiving low unemployment insurance benefits might have access to the housing cost support component of the social assistance scheme, but there usually has to be a social event to be eligible for social assistance. A social event is unemployment, illness or divorce.

### ***Eligibility***

It requires, as mentioned, usually a social event to become eligible for social assistance, three have already been mentioned. Further more, the event should be such that the person cannot support himself and his family financially and there should be no other public benefits available, e.g. a social pension. It should be remembered that unemployment insurance is voluntary in Denmark. This has the implication that non-insured unemployed will receive social assistance in the first place and not just as an exit benefit from unemployment insurance. It is also an eligibility criterion to be available for the labour market (there are some exemptions e.g. based on health reasons). The



availability for the labour market implies that activation measures are mandatory and reasonable job offers have to be accepted.

The scheme also contains support for housing costs if the person have 'high' housing costs or has to provide for 'many' children, cf. the section on entitlements.

The eligibility criteria are reasonably straight forward for individuals, also spouses where both meet the criteria, e.g. both are unemployed. In the case where one of the spouses (usually the wife) has never worked (and has no intention to do so) and the other spouse is eligible for social assistance, he will get a supplement but the wife will not get social assistance herself, cf. the section on entitlements. There are also cases where a person can get S.A. without a social event for that person. Consider e.g. a married couple where one of the spouses has a high earned income and the other a low one. If the spouse with the high income becomes unemployed and is eligible for S.A., both spouses will receive 'individual' S.A., which then will be tapered against the low income of the working spouse. If that income is lower than the 'individual' S.A. both spouses will receive S.A., one will receive the full rate and the other a 'topping-up' of earned income to S.A. individual rate level.

If one of the spouses is receiving a social benefit (with no work related requirements attached) he or she will not be eligible for S.A. If the benefit is 'work related', e.g. unemployment insurance benefits, the spouse receiving this will be eligible for S.A. in the same sense as the working spouse in the couple where the other is unemployed and eligible for S.A. The unemployment insurance benefit is then tapering the S.A. of the couple.

### ***Entitlements***

A person eligible for social assistance who is 25 years or more and not a provider in relation to children will receive 6,998 DKK/month as an 'individual' benefit. If he or she is a provider in relation to children, the rate is 9,317 DKK/month. These rates are 60 % and 80 % (except for some rounding) respectively of the max. unemployment benefit. For young people with their own home the rate is 4,489 DKK/month (they are in the age bracket 18-25 years) and if they live with their parents it is 2,195 DKK/month. There are several other rates for special groups of the population, they will not be covered here.

Spouses meeting the criteria will both receive the social assistance, so a couple will receive 2 times the rates if they both meet the criteria. If one of the spouses has never worked and has no intention to do so, she (the 'usual' case) will not receive any social assistance, but the husband will receive a supplement of 2,195 DKK/month, the same rate as for young persons living with their parents.

The general rule is that social assistance is tapered DKK for DKK against own income and income of the spouse (but not income of the children). There are several modifications to this rule. If the spouse (not eligible for social assistance) receives another social benefit it is only the amount of that benefit which is above the appropriate social assistance rate (6,998 DKK/month or 9,317 DKK/month) which is used to taper the social assistance of the other spouse. This has the same effect as in the case where the spouse has a work related benefit, he or she then receives S.A. but the benefit is basis for tapering the S.A. of both spouses (in effect only the amount above the 'individual' rate will taper the S.A. of the other spouse).

Income (from work) equivalent to 10.24 DKK/hour for a maximum of 160 hours per month is disregarded in the base for tapering of social assistance. The invalidity amount from the disability pension is disregarded as well as the support and care supplement from that scheme. There are also a few other items which will be disregarded, the most important is the compensation for loss of working capability due to industrial injuries.

If the spouse has earned income the social assistance is calculated for both spouses and this sum is then tapered against the income of the working spouse with the mentioned disregards.

The social assistance scheme contains allowances for several purposes, the most important is for housing costs, it will be the only one covered here. If recipients of social assistance (and in a few cases unemployment benefits and sickness benefits if they are sufficiently low) have large housing costs and/or many children they are, as already mentioned, eligible for housing allowances according to the social assistance scheme. The allowance depends on net housing costs, own payment, other income and some limitations.

For people living in rented accommodations the net housing cost consists of the rent minus housing benefits received according to the ordinary housing benefit scheme plus expenditures for heating, water, gas, electricity and other current expenditures related to the dwelling. Revenue from renting out is subtracted on an after tax basis.

For owners it is the tax value of the imputed rent plus installment payments, interest and other costs related to mortgages and other loans related to the home minus the tax value of such tax deductible costs which constitute the component of the net housing costs equivalent to the rent for people living in rented accommodations. The tax value of the reduction cannot be larger than making the 'personal' social assistance tax free. If the tax value of the deductions are very high only part of it is deducted from the cost and in this way the net housing costs are reduced by less than they would otherwise have been.

Cooperative housing is quite popular in Denmark. Here it is the 'fee' plus costs related to loans for the dwelling minus the tax value of deductions which constitute the equivalent to the rent for people living in rented accommodations.

The net housing costs is one of the main components of the scheme, own payment is another.

Own payment for non providers in relation to children is 1,900 DKK/month. If it is a couple the combined own payment is 3,800 DKK/month.

For providers in relation to children the own payment is 2,650 DKK/month (per person). This is reduced by 500 DKK/month (per person) for each child after the first living at home.

The housing allowance is now calculated as the difference between the net housing costs and the own payment. If the actual net income (income after tax) is larger than the net income resulting from the relevant 'personal' social assistance, the housing allowance is reduced by the difference.

There are also some limitations. The total net income (including net income from ‘personal’ social assistance) plus the housing allowance cannot be larger than 90 per cent of the former net income (income for the month before the event).

Non providers in relation to children are exempted from the 90 per cent rule if their net income plus housing allowance is not larger than the ‘personal’ social assistance (after tax) received by providers in relation to children.

If the social assistance, net ‘personal’ and housing allowance together with other net income is larger than the net income received from maximum unemployment benefits, the social assistance will, after 6 months, be reduced so that net income plus housing allowance is equivalent to net income from maximum unemployment benefits.

### ***Taxation***

‘Personal’ social assistance is taxable income, the housing allowance is non taxable income.

## **1.10 Danish personal taxation**

### ***Introduction***

The Danish tax scheme for personal taxation is, as for most countries, a comprehensive and complicated set of rules. Here it is only possible to give the most important rules, the ‘main street’ rules so to speak. Earned income, whether it is from employment or self employment will be treated in the same way. This is not completely out of line with reality, because a personal income is calculated from business income and taxed accordingly. There is a special set of rules where self employed have the possibility to defer part of the taxation, this has been ignored in the first place.

There are 3 layers, one is for the state, one is for the county and one is for the municipality. It is, however, usual to look at the 3 layers together, they constitute ‘one’ tax scheme even if there is considerable variation in the tax rates at the local level. For the purposes here the rates considered will be average for the country. Only rules for Danish residents will be considered.

It should be noted that a minor tax reform was implemented from 1999, implying substantial changes compared to the 1998 rules described in the following. Negative capital income will e.g. not be part of the base for the middle state tax from 1999.

### ***Eligibility***

This is not the usual term used when taxation is considered, but if taxes are interpreted as negative benefits or transfers from the population to the Government, it is not wrong to do so. It is, however, more usual to talk about taxable persons, which, as already mentioned, are Danish residents, the definition of which will not be considered here. All observations in the ECHP data are assumed to be Danish residents. The tax unit is the individual, but spouses can to some extent transfer unused allowances between each other, and capital income from both is in some cases taxed only for one of the spouses, cf. the section on entitlements.

## ***Entitlements***

It is neither usual to talk about entitlements in this connection, obligations is more appropriate, but that is not so important. Income subject to tax is the base for the taxation. The main components of the tax base are described below.

## ***Tax base***

Personal income. There are several income concepts used in the Danish tax scheme for personal taxation. One of them is personal income. It consists of wages, business income (from self employment), pensions and most benefits (cf. the section on taxation for each of these). Pension contributions are deductible, as is the general social contribution, cf. the section on social contributions. The pension contributions can be recorded in the income return or can be of the employer administered type, which never shows up on the income return (they are then also deducted from, or never included in, the personal income).

Capital income. Income from interest, imputed rent from owned dwellings, yield from business (special defer arrangement for self employed), profits from sale of shares which have been owned for less than 3 years. Interest expenditures are deducted. For many individuals the capital income is negative, this is e.g. the case for most owners of their own home.

General allowances. These include costs for transportation, membership fees for unions and unemployment insurance, alimony for children or former spouse.

Taxable income. This concept is calculated as personal income plus capital income (which might be negative) minus general allowances.

Income from shares. Yield from shares and profits from sale of shares which have been owned for more than 3 years.

## ***State tax***

There are three levels of the state tax: bottom, middle and top tax.

Bottom tax. The base for this tax is taxable income. The tax rate is 8 per cent in 1998 of the taxable income minus a deduction of 31,400 DKK (22,500 DKK for young people and children below 18 years of age). Unused deduction can be transferred between spouses.

Middle tax. The base for this tax is personal income plus capital income (which might be negative). The tax rate is 6 per cent in 1998 of the mentioned base minus a deduction of 139,000 DKK. Unused deduction can be transferred between spouses. If the negative capital income of one of the spouses is larger than his or her personal income, then the unused deduction is augmented with the difference.

Top tax. The base for this tax is personal income plus positive net capital income. Only positive net capital income above 21,400 DKK enters the base. The tax rate is 15 per cent of this base minus a deduction of 251,200 DKK. Unused deduction cannot be transferred between spouses. Spouses in married couples have their positive net capital income calculated together. If the combined positive

net income is larger than 2 times 21,400 DKK, the top tax is calculated for the difference with the spouse who has the largest personal income. The tax calculated in this way is then allocated in proportion to the net capital income of each spouse above 21,400 DKK. It is important to note that negative capital income does not enter the base. The lowest capital income entering the base for the top tax is 0.

### ***Local tax***

County, municipality and church tax are all calculated according to the same base, i.e. taxable income. The tax rates vary across municipalities and counties. The average tax rate in 1998 was 32.4 per cent including average church tax of 0.7 per cent (for those who are members of the Danish state church). This rate is used on the taxable income minus a deduction of 31,400 DKK. Unused deduction can be transferred between spouses. The base and the deduction is the same as for the state bottom tax.

### ***Tax on income from shares***

The base is taxed with a rate of 25 per cent for amounts up to 35,000 DKK and with a rate of 40 per cent above that. Unused progression threshold can be transferred to the spouse.

### ***Taxation ceiling***

The percentages mentioned here (not including church tax and tax on income from shares) add up to 60.7. No part of the income can however be taxed with a rate higher than 58 per cent in 1998. The state top tax rate is reduced with the difference between the actual rate (here 60.7) and 58, i.e. 2.7 percentage points.

### ***Special rules***

Negative income. If the taxable income is negative the tax value (state bottom and local tax), calculated without considering the standard deductions, of the negative taxable income is deducted from the middle and top tax and the tax on income from shares above the progression threshold. If there is still tax value left it is transformed back to income (negative) by reversing the procedure used to calculate the tax value. The 'remaining' income is deducted (nominal value) from the taxable income of the spouse, and if there is still some left, then (and now with the tax value as already mentioned) from the progressive taxes of the spouse. If there after this is still a deficit the described procedure can be repeated for the next 5 years.

Personal income. If the personal income (for a single) is negative, deductions are made in (if any) the positive capital income before calculation of middle and top tax. If the person is married the negative income is deducted in the personal income of the spouse before calculation of middle and top tax and then in the combined positive net capital income of the spouses. A deficit can be carried forward for 5 years.

Income from shares. If this income is negative (due to losses from sales of shares) the tax value of the negative income is calculated as if it was positive. The negative tax value is then reducing the other calculated taxes of the person, and if there is still negative tax value left it reduces the calculated taxes of the spouse. It is possible to carry forward the deficit for 5 years.

Net wealth. From 1997 there is no taxation of net wealth.

### ***Social contributions***

Two of the social contributions, i.e. the general 8 per cent contribution and the temporary pension contribution are direct components of the tax scheme.

General 8 per cent social contribution. Basis for this contribution is gross wages and taxable fringe benefits. For self employed it is the part of the business income categorized as personal income which constitutes the basis.. There are in principle no deductions. Employer administered pension contributions are also levied with this contribution. Employees own ATP contribution, which is recorded in the income return, is, however deductible, because it is taxed together with the share from the employer in the ATP foundation. For practical purposes this can be seen as part of the tax scheme and not as a social contribution. It is not levied on transfer payments, the rates for these have instead been reduced accordingly. The social contribution is deductible in personal income.

Temporary pension contribution. This is 1 per cent of the same base as the general social contribution. Recipients of unemployment benefits, sickness benefits and social assistance will have to pay 1,300 DKK on an annual basis in 1998. The social contribution is deductible in personal income.

Contribution for supplementary pension scheme (ATP). This contribution is paid only by employees and only according to hours worked, not income earned. The own contribution in 1998 was 894 DKK on an annual basis (1/3 of the total contribution) for full time work (27 or more hours per week), for a working week between 18 and 27 hours the rate was 2/3 of 894 DKK and for a working week between 9 and 18 hours it was 1/3 of 894 DKK. For a shorter working week than 9 hours no contribution is paid. Recipients of unemployment benefits and sickness benefits paid 2 times the rate for the corresponding employed employee. Social assistance recipients paid the usual rate but only after 6 months as a recipient of social assistance. This contribution is deductible in personal income.

Contribution for unemployment insurance. This scheme is voluntary in Denmark, but if a member the contribution for a full time insurance was 3,904 DKK in 1998, 2/3 of this for part time insurance. This contribution is deductible in taxable income.

### ***Bases for tapering of benefits***

1. Housing benefits. Basis for tapering of this benefit is family income. For each family member it is:

Personal income plus positive net capital income plus income from shares above 35,000 DKK.

If there is a married couple the calculation is made in the same way as for the state top tax, but the deductions for personal income and positive net capital income are not applied. Negative income is transferred to the spouse and carried forward in the same way as for the state top tax. For children only income above 13,400 DKK (annual basis) counts. From the family income calculated in this way there is a deduction of 25,500 DKK for each child in the household. For single

pensioners (living alone) there is a deduction of 26,200 DKK and for other pensioners (cohabiting or married) there is a deduction of 3,100 DKK for each pensioner in the household.

2. Unemployment benefits. Here it is not tapering but base for calculation of the benefit. This base is income from work in the last 3 months minus the general 8 per cent social contribution. The compensation is 90 per cent of this base with a maximum of 538 DKK per day for 5 days a week.

3. Old-age pension. Basic amount: This component is tapered on basis of own income only. The basis is income from work minus the general 8+1 per cent social contributions. For practical purposes this is in most cases equivalent to the personal income as it is calculated for taxation, but without the deductions for paid pension contributions.

Pension supplement: This component is tapered on basis of own income and for married pensioners also on basis of income from the spouse. For single pensioners the basis is:

Personal income plus positive net capital income plus income from shares above 35,000 DKK.

The concepts are identical to those from the top state tax in the personal taxation scheme, cf. this section, with an important exception: Taxable social pensions should be subtracted from personal income, but not income from ATP. The deductions in the tax scheme (251,200 DKK for personal income and 21,400 DKK for positive net capital income) are not applied in the base for tapering of the pension supplement, but the deductions for income from shares is.

The basis for married pensioners is calculated as the sum of the bases for each of the spouses (as described above). Deficits (negative income) is transferred between the spouses and carried forward as described in the section on personal taxation. If one of the spouses not is a pensioner there is a deduction of 10,000 DKK in the base for that spouse, and if the remaining base exceeds 135,000 DKK, income between 135,000 DKK and 170,000 DKK is disregarded.

4. Disability pension. Basic amount: This component is tapered on basis of own income only. Basis is:

Personal income plus positive net capital income plus income from shares above 35,000 DKK.

This is again identical to the basis for the state top tax (except for the deductions) with the important exception that taxable social pensions and income from ATP should be subtracted. In the state top tax positive net capital income is calculated for the spouses together and the tax is allocated in proportion to the share of each spouse. Here it is a little different. If the net capital income is positive for each of the spouses, each spouse keeps his or her positive net capital income. If it is negative for one and positive for the other, the sum is allocated to the spouse with the positive net capital income, and this component is 0 for the spouse with negative capital income. These deviations from the state top tax procedure, because the basis for tapering the basic amount is own income only.

Pension supplement. This component is identical to the supplement for old-age pension (and the only one of the supplements in the disability pension scheme which is tapered). The base for tapering the pension supplement is exactly the same as for the pension supplement in the old-age pension scheme.

5. Parents' payment for daycare for children. Tapering of the subsidy is based on the base for the state top tax, it is:

personal income plus positive net capital income plus income from shares above 35,000 DKK.

It is the sum of the parents' income which is used. If the parents are married the net capital income is calculated and allocated just as for the state top tax. The deductions for personal income and positive net capital income are not applied. The rules for transfer of negative income between spouses are valid and negative income can be carried forward according to the rules for the state top tax.

6. Social assistance. Base for tapering of social assistance (the 'personal' component) is personal income as it is calculated in the tax scheme. Only token net wealth is allowed when social assistance is received, so capital income is disregarded. There is a deduction of 10.24 DKK per worked hour for a max. of 160 hours per month in this tapering base. As far as tapering of the housing allowance is concerned it is the actual after tax income above the after tax income from the 'personal' component of social assistance which is the base.



## 2. Data

### 2.1 General description of the Danish data

The Danish data is based on the European Community Household Panel Survey (ECHP) data (UDB version) made available by Eurostat. The data is collected by The Danish National Institute of Social Research. ECHP collects information on the social and economic situation of the respondents, including income, assets, labour market status etc.

In the original data persons aged 15 or less were not interviewed. In the Euromod model these children are imported in the simulations of child related benefits. Therefore we had to include these children in the Euromod data. As a result the Euromod data contains 7044 persons in 3215 households, compared to 5503 persons in 3223 households in the original data – we had to delete eight households because of too many missing variables.

To weight the Euromod data the weights that Eurostat have provided have been used. The weights applied to the personal data have been scaled to deal with the fact that the Euromod data includes more individuals than the original data.

### 2.2 Variable adjustment

To produce the data for the Euromod model a lot of imputations have been made. In the following we will go through the overall idea behind the main part of the imputations.

#### *Variables at a personal level*

Labourmarket: All labourmarket information has been imputed so they reflect the year of 1994 and not the time of the interview (early 1995). Missing values have been imputed randomly so the overall distribution remained constant.

Education status: For children aged 15 or less the education status has been imputed using their age.

Activity status during the year of 1994: For all persons six activity status variables have been created. Number of months in 1994 being: 1)employed 2)self-employed 3)in education 4)unemployed 5)pensioner 6)other economically inactive. For each person the sum of these six variables is per definition 12. The information from these variables is used when simulating unemployment benefits for people being partially unemployed during 1994 and to determine the dominant activity status during the year 1994.

Unemployment insurance membership and membership payment: have been computed using information from the original questionnaire data. This variable is important because the payment is tax-deductible.

Union membership and membership payment: Was imputed using the assumption that a person who is member of an unemployment insurance scheme is also a member of a union. The payment was imputed using the average payment in the industry where the person is occupied. This variable is important because the payment is tax-deductible.

Disability degree: To simulate the disability pension the person's degree of disability is needed. A person can be 50, 67 or 100 percent disabled. The imputation into these three categories was done using the received amount, the person's sex and age and national statistics.

ATP-pension income: The ATP-pension income was imputed using information from the original questionnaire data.

Maternity income: Maternity income was imputed using information from the original questionnaire data.

Early retirement income: The early retirement income was imputed using the criteria that the person received pension income, but was aged below 67 years and higher than 49 years.

The Financial capital wealth: Has been imputed using the financial income in 1994 and an interest rate of 7 percent (Financial capital wealth = Financial income in 1994/0,07). This imputation is quite crude and the variable should be used carefully.

### *Variables at the household level*

Interest payment on mortgage loans: The variable was imputed using the assumption that 2/3 of the total gross mortgage payment is interests. This variable is important because the interest payments are tax-deductible. This imputation is again very crude.

The size of the accommodation: The size of the accommodation was imputed using the number of rooms in the dwelling using the following table:

Number of rooms	Size in square meters
1	35
2	50
3	75
4	100
5	125
6	150
7	175
8	200
9	225
10+	250
Missing	100

This variable is important when simulating housing benefits.

## 2.3 Net to gross conversion

The income and benefit variables available in the ECHP (UDB version) are after tax, social contributions and other deductions (mortgage interest rates, union fees etc). In the original Danish questionnaires people are asked to provide both gross and net income amounts. The gross amounts needed to run the model have been imputed using the information in the original questionnaire data. The benefit amounts have not been imputed to gross amounts because this information is not available in the original questionnaire data. In running the model this is not a serious problem, since we simulate all major benefit schemes.

## 2.4 Updating factors

To update the data from 1994 to the common base year 1998, the following factors have been used:

Income source/index type	Name	Value	Notes
Price index	P_ind	1,085073	
Employment : manual			
Male	E_ind <sub>1</sub>	1,125812	
Female	E_ind <sub>2</sub>	1,125765	
Employment: non manual			
Private sector	E_ind <sub>3</sub>	1,165234	
Public sector	E_ind <sub>4</sub>	1,109901	
Self employment	E_ind <sub>5</sub>	1,165234	= E_ind <sub>3</sub>
Unemployment insurance membership payment	U_ind	1,099099	
Investment income	I_ind	1,085073	=P_ind
Rent	R_ind	1,087989	
Mortgage interest	M_ind	0,941279	
Benefits	B_ind <sub>1</sub>	1,056974	Unemployment insurance and most benefits
	B_ind <sub>2</sub>	1,211785	Family related allowance ( <b>non taxable</b> )
	B_ind <sub>3</sub>	1,056037	Public pension

Source: The Danish Ministry of Economic Affairs (Lovmodellen): Family and incomes (April 1999).

## 3. Validations of Aggregates

In this chapter we compare some basic preliminary results from the Euromod baseline run with national statistics, in order to validate the results produced by Euromod.

The validation of the Danish model can be split into two main areas: basis model validation with constructed cases to check if the model is coded correctly and the aggregate validation (validation of model results when using the actual data as input to the model). The basic validation of the model has already been done with a good result. The following sections contain the aggregate validation.

### 3.1 Basic demographics

Table 1. Basic demographics

Age		Euromod			National statistic		
		Sex of the individual		Total	Sex of the individual		Total
		Female	Male		Female	Male	
0-6 years	Count Per cent of total population	231270 4,5%	282371 5,5%	513641 10,0%	216000 4,2	228000 4,4	443000 8,5
7-14 years	Count Per cent of total population	238430 4,6%	249901 4,9%	488331 9,5%	218000 4,2%	228000 4,4%	446000 8,6%
15-17 years	Count Per cent of total population	97624 1,9%	102597 2,0%	200221 3,9%	94000 1,8%	99000 1,9%	194000 3,7%
18-24 years	Count Per cent of total population	241757 4,7%	255484 5,0%	497241 9,7%	254000 4,9%	265000 5,1%	519000 10,0%
25-59 years	Count Per cent of total population	1286449 25,0%	1275390 24,8%	2561839 49,8%	1257000 24,2%	1299000 25,0%	2556000 49,2%
60-66 years	Count Per cent of total population	142755 2,8%	142966 2,8%	285721 5,5%	172000 3,3%	159000 3,1%	330000 6,3%
67+ years	Count Per cent of total population	342911 6,7%	259095 5,0%	602006 11,7%	422000 8,1%	287000 5,5%	709000 13,6%
Total	Count Per cent of total population	2581196 50,1%	2567804 49,9%	5149000 100,0%	2633000 50,7%	2563000 49,3%	5197000 100%

Sources: Euromod and Statistics Denmark

Table 1 shows that the basis demographics in the Euromod data overall is quite close to the real Danish population. It should however be noted that we have too many people below the age of 18 years and too few above the age of 60 years in the Euromod data. With this in mind one would expect to observe overestimation of child related benefits and underestimation of old-age related benefits in the model runs.

## 3.2 Main benefits

### 3.2.1 Old-age pensioners

Table 2. Number of old-age pension recipients and total costs

<b>Sex</b>		<b>Euromod</b>	<b>National Statistics</b>
Female	Count	342292	419000
	Per cent of total population	6,6%	8,1%
Male	Count	252353	288000
	Per cent of total population	4,9%	5,5%
Total	Count	594645	708000
	Per cent of total population	11,5%	13,6%
Annual total costs (Million DKK)		45288	51925

Sources: Euromod and Statistics Denmark

Table 2 shows that the Euromod data have too few pensioners. This can also explain the low total costs.

### 3.2.2 Disability pension

Table 3. Number of disability pension recipients and total costs

<b>Sex</b>		<b>Euromod</b>	<b>National Statistics</b>
Female	Count	165377	158000
	Per cent of total population	3,2%	3,0%
Male	Count	141765	115000
	Per cent of total population	2,8%	2,2%
Total	Count	307142	273000
	Per cent of total population	6,0%	5,3%
Annual total costs (Million DKK)		28704	27410

Sources: Euromod and Statistics Denmark

Table 3 shows that Euromod estimate disability pension quit well.

### 3.2.3 Social assistance

Table 4. Number of social assistance and housing allowance recipients and total costs

<b>Sex</b>		<b>Euromod</b>	<b>National Statistics</b>
Female	Count	47073	----
	Per cent of total population	0,7%	----
Male	Count	37981	----
	Per cent of total population	0,9%	----
Total	Count	85054	186000
	Per cent of total population	1,7%	3,6%
Annual total costs (Million DKK)		5188	8601

Sources: Euromod and Statistics Denmark

Table 4 shows that Euromod severely underestimate the number of social assistance recipients.

### 3.2.4 Housing benefits

The Danish housing benefit system have two schemes: one for persons in their working age and one for pensioners (both old-age and disability pensioners).

**Table 5. Housing benefits**

		Euromod				National Statistics			
		Type of accommodation				Type of accommodation			
		Rent	Owned	Other	Total	Rent	Owned	Other	Total
Working age	Count (number of households) Per cent of total households	224095 9,4%	0 0%	0 0%	<b>224095</b> <b>8,9%</b>	164000 5,7%	0 0%	5000 0,2%	<b>169000</b> <b>5,9%</b>
Pensioners	Count (number of families) Per cent of total households	340432 13,6%	0 0%	0 0%	<b>340432</b> <b>13,4%</b>	302000 10,5%	4000 0,1%	28000 1,0%	<b>334000</b> <b>11,6%</b>
Total	Count (number of families) Per cent of total households	564527 23,0%	0 0%	0 0%	<b>564527</b> <b>22,3%</b>	466000 16,2%	4000 0,1%	33000 1,1%	<b>503000</b> <b>17,4%</b>
Average monthly amount for Working age	DKK	826	----	---	<b>826</b>	967	---	786	<b>962</b>
Average monthly amount for Pensioners	DKK	1422	--	--	<b>1422</b>	1739	1224	836	<b>1658</b>

Sources: Euromod and Statistics Denmark

Table 5 show that Euromod overestimates the number recipients of housing benefits, for people in their working age, and underestimates the average amounts. An explanation for this may be that we assume full take-up in the simulation of housing benefits. A result of this can be that we have too many recipients and the average amounts will be underestimated because a household with low possible housing benefits may not have a large incentive to claim their rights.

### 3.2.5 Unemployment benefits

To compare with the official statistics we have to add the social assistance recipients to the unemployment recipients.

Table 6. Number of unemployment and social assistance recipients

Age		Euromod							National Statistics		
		Unemployment benefits		Social assistance		Total			Unemployed		
		Female	Male	Female	Male	Female	Male	Total	Female	Male	Total
16-24	Count	38923	36032	16501	15164	74955	31665	106620	41202	39874	81076
25-49	Count	189728	148938	25244	16492	338666	41736	380402	258699	191380	450079
50-59	Count	36526	32502	2634	3784	69028	6418	75446	54109	51524	105633
60-66	Count	7383	10178	2694	2540	17561	5234	22795	9458	11139	20597
Total	Count	272560	227650	47073	37980	500210	85053	<b>585263</b>	363468	293917	<b>657385</b>

Sources: Euromod and Statistics Denmark

Table 6 shows people being unemployed in 1998 – some part of the year others all year. The severe underestimation of the number of social assistance recipients has its impact (see table 4). To get the official full-time unemployment one needs to multiply the total number of unemployed with the average unemployment degree during the year. For Euromod this gives 312306 individuals and for the official statistic 182752 individuals. From this we can conclude that Euromod underestimates the total number of recipients, but overestimates the full-time unemployed. An explanation for this can be that we use 1994 data. From 1994 to 1998 the number of full-time unemployed has fallen drastically. In our simple updating of the data problems like these are not solved (this would require reweighting). Another reason for an underestimation of amount of social assistance and number of recipients is probably the ‘time-period’ problem: If people go in-and-out of work during the year then their annual income divided by twelve (which is what we use) may be too high for social assistance (even though they may have received some SA in the months when they had no income). This, however, is not a problem for UE-benefits.

### 3.3 Taxes

Table 7. Aggregated taxes

			Euromod	National Statistics
1. Total State tax		Million DKK	72866	62053
	Bottom tax	Million DKK	44724	41875
	Middle tax	Million DKK	15043	11266
	Top tax	Million DKK	13099	8842
2. Total Local tax (incl. Church tax)		Million DKK	181131	170195
3. Temporary pension contribution		Million DKK	6676	5875
4. Total tax (sum of 1,2,3,)		Million DKK	260673	238123

Sources: Euromod and Statistics Denmark

Table 7 shows that Euromod overestimates the total tax-payments. A possible explanation for this may be that we do not have information on all tax deductible income components (deductible transport costs, interest rate payments on other loans than mortgage loan etc.).

### 3.4 Poverty measures

Table 8. Poverty measure

Poverty measure		Euromod		National statistics
		The modified OECD equivalence scale	The square root method	The square root method
60 per cent of median equivalised household income	Poverty line (yearly DKK) Per cent of individuals below poverty line (weighted)	76784 11,1%	83502 13,0%	84400 6,9%

Source: Euromod and The Danish Ministry of Economic Affairs (Lovmodellen)

Table 8 shows that Euromod produces too many low-income individuals.

## 4. Conclusion

The ECHP data based simulations are in general not very far from the national statistics, with the exception of the simulation of social assistance. Far better results can be obtained by using register data as basis for the model simulations, and that will be done in the MICRESA project.