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EMU Buffering of the Unemployment Insurance System

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Contents

1. Introduction

Finland's possible accession to the third phase of the EMU and its transition to a common European currency means that economic adaptation to external disturbances will increasingly occur through the flexibility of the labour market. It is, at least in principle, possible to improve the ability of the labour market to adapt to disturbances by collecting funds in good times "for a rainy day". As part of the incomes policy settlement of autumn 1997, buffer funds of the employment benefit system were agreed upon. These buffer funds can be used to moderate, on one hand, the fluctuations of the membership fees of unemployment funds, i.e. payments by the insured persons, and, on the other, the fluctuations of the unemployment insurance contributions of employers and all wage earners.

Changes in the costs and financing of unemployment benefits complicate the supervising task of private unemployment funds by government authorities. This study examines the changes of the bases of determination of both the memberships fees and the equalisation reserves of unemployment funds. The operating principles of the Unemployment Insurance Fund and the collection of the fund are also discussed.

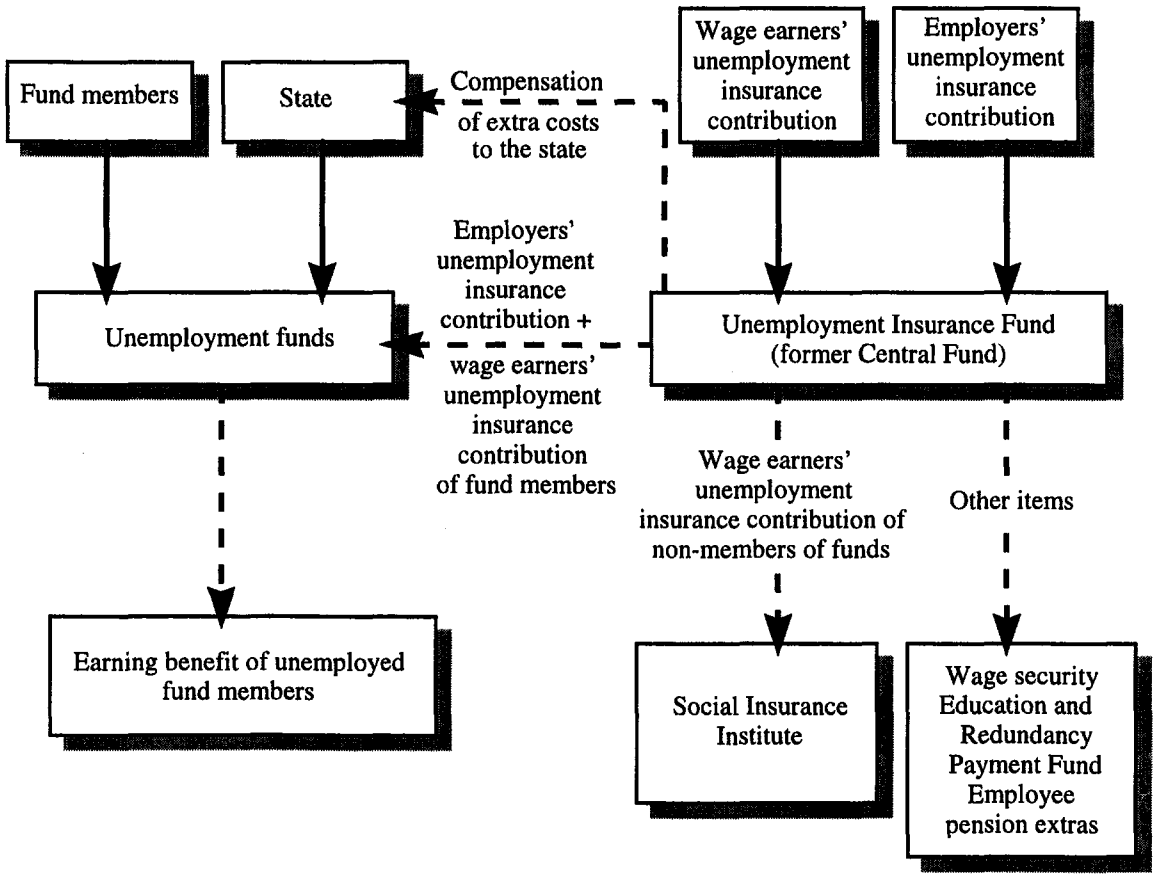
The financing flows of the earning-dependent unemployment insurance system will change from the beginning of 1999. The main features of these financing flows are illustrated in figure 1. The unemployment funds pay the unemployment insurance of their members as before. They obtain their income from their members in the form of membership fees, from the Unemployment Insurance Fund and from the state. The Unemployment Insurance Fund obtains its income from the unemployment insurance contributions paid by wage earners and employers. In the new system, the unemployment insurance contributions of wage earners not belonging to unemployment funds are directed to the Social Insurance Institute. The state pays an amount corresponding to the basic daily allowance of the earnings-related unemployment benefit. It was agreed in connection with the reform that the change of system[1] may not increase public expenses. The Unemployment Insurance Fund pays the extra costs incurred on the state. The expenses of the Unemployment Insurance Fund consist, in addition to the items paid to unemployment funds and the state, of other items used to finance, e.g., wage security, training and severance funds and employee pension extras.

There has traditionally been little transfer to reserves of earning-dependent unemployment benefits. Unemployment funds have had equalisation reserves to moderate fluctuations of membership fees. The deep recession in the early 1990's demonstrated the need to expand the size of these equalisation reserves. The Central Fund has also had a small reserve aimed at equalising the employer's unemployment insurance contribution. During the recession, these contributions had to be hiked

[1] At present, the state pays, as per a permanent law, about 47.5 per cent of the costs of the income-dependent unemployment benefit. From the beginning of 1999, the state pays the basic daily allowance for each day of unemployment (excluding qualifying days) of the members of a fund.

considerably, while a new wage earners' unemployment insurance contribution was agreed upon. In the beginning of the year 1998 the name of the Central Fund will change into Unemployment Insurance Fund, and at the same time the reserve funding of the unemployment insurance system will be increased.

Figure 1. *Financing flows of earning-dependent unemployment benefit from 01 January 1999*



The EMU buffer of the unemployment insurance system signifies a fund by means of which the fluctuations between good and bad times of wage earners' and employers' unemployment insurance contributions can be moderated. In the current system, unemployment insurance contributions increase in an economic recession and decrease during an upswing, heightening economic fluctuations and worsening unemployment.

This study examines the dynamics of operation of the Unemployment Insurance Fund in a hypothetical economic recession in which it is presumed that the Finnish national economy is first hit by a recession and after that by a precisely equal upswing, measured by the change in the rate of employment.[2] Variations of the unemployment

[2] Studies show that the dynamics of unemployment have a so-called hysteresis property or historical dependence, the rise of unemployment and the improvement of employment not being mutually symmetrical events, but instead, unemployment tending to revert very slowly to the level prevailing before the economic disturbance.

insurance contribution of employers and wage earners are examined first, keeping the Unemployment Insurance Fund constant. Secondly, the alterations of the Unemployment Insurance Fund are examined in the case in which unemployment insurance contributions remain fixed throughout the hypothetical economic cycle. In addition, the changes of unemployment insurance contributions during economic development are examined, when the aim is to collect an Unemployment Insurance Fund of the size agreed in the buffer contract between the social partners.

The operating principles of the Unemployment Insurance Fund can also be applied to the operation of unemployment funds. The funds for the equalisation reserves of unemployment funds, aimed at eliminating the fluctuations of membership fees due to market conditions, are collected from the membership fee receipts of unemployment funds. The study first defines a balanced membership fee covering the benefit costs of the unemployment fund. While the membership fee of an unemployment fund is equal to the balanced membership fee, the size of the equalisation reserve remains unaltered. After this, the long-term optimum level of the unemployment fund equalisation reserve is defined. While the equalisation reserve remains equal to its optimum level, the membership fee can, with its aid, be kept stable in normal economic recessions. Finally, the determination of the annual membership fee is examined, taking into account the balanced membership fee and how much the target level of the equalisation reserve, annually confirmed by the Ministry of Social Affairs and Health, and its currently prevailing level differ from the long-term optimum level. When defining the target level of the unemployment fund equalisation reserve, the unemployment situation of an individual unemployment fund must be estimated. During a recession, the target level of the unemployment fund equalisation reserve ought to be below the long-term optimum level and, during an upswing, above it.

1.1 Unemployment fund membership fees

According to the Unemployment Fund Act in force, the membership fees of an unemployment fund must be set in such a way that, together with the state contribution and that of the Central Fund of unemployment funds, they can be regarded as sufficient to fulfil the obligations of the fund. The membership fees are confirmed annually by the Ministry of Social Affairs and Health, on the basis of a membership fee proposal made by the unemployment fund by the end of October.

The general grounds of confirming the membership fee are prescribed in more detail by decree. According to the decree on the enforcement of the Unemployment Fund Act, an unemployment fund must, when applying for the confirmation of the membership fee, submit to the Ministry of Social Affairs and Health a calculation on the adequacy of the same, taking into account the payable daily unemployment benefits, training subsidies, job-rotation leave compensations, administration costs and transfers to the equalisation reserve.

As the earnings-related unemployment benefit is income-dependent, i.e. the benefits paid by a fund depend on the income level of the members receiving daily unemployment benefit, information on the members of the fund, the paid daily allowances and the economic state of the fund is required in determining the level of the membership fee. As the benefits are proportioned to earnings, the most natural manner of collecting membership fees is a percentage-based fee (% of salary). This report examines the grounds of determination of membership fees with the aid of the membership fee of a balanced fund budget and the change of the equalisation reserve.

1.2 Unemployment fund equalisation reserve as a trade cycle buffer

Till recently, the equalisation reserves of unemployment funds have been relatively small in size. After the recession of the 1990's, increasing the size of equalisation reserves has been proposed in order to enable the moderation of the fluctuations of the membership fees of these funds.

According to the current system, the size of the equalisation reserves depends on the size of the fund and on the benefit costs at its responsibility. The funds are divided into seven categories on the basis of the benefit costs. The smaller the category the fund belongs to, the greater (relatively) the equalisation reserve may be in proportion to the benefit costs.

The current basis of determination of the equalisation reserve tends to increase the fluctuations of unemployment fund membership fees in economic cycles. In a recession, when the benefit costs paid by a fund increase and its membership fee receipts decrease, its equalisation reserve must, according to the prescriptions, also be increased. Both the growth of benefit costs and the size target of the equalisation reserve bring, in a recession, simultaneously pressure to increase membership fees.

The determination of the long-term optimum level of the equalisation reserve is examined in this research report from the standpoint of the objective that an unemployment fund equalisation reserve can be discharged when benefit costs increase and raised back to its long-term optimum level when benefit costs decrease. When the unemployment of the fund members is at the normal level, the size of the equalisation reserve ought to be near the long-term optimum level.

1.3 The Unemployment Insurance Fund as a trade cycle buffer

The labour market organisations noted on 22 May 1997 in their joint statement that the labour market and the whole national economy must prepare for economic disturbances in circumstances no longer permitting alterations of exchange rates. Such a situation will arise after the start of the third phase of the EMU on 01 January 1999, when the countries participating in the monetary integration of the EU proceed to the use of a common currency, the Euro. The central labour market organisations mutually

concluded on 17 November 1997 a buffer agreement aiming at absorbing economic disturbances in conditions of a common currency.

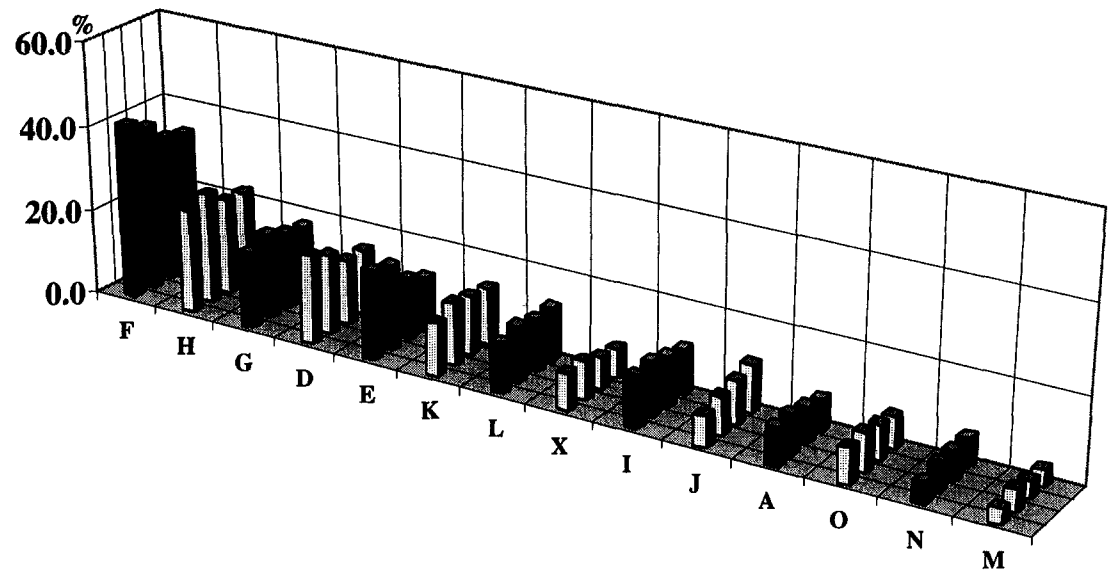
As to the unemployment insurance system, the buffer agreement states that through the unemployment insurance contributions of wage earners and employers, a fund of about three thousand million Finnish marks (FIM) will be collected in the Central Fund of unemployment funds, whose name will, at the same time, be changed into Unemployment Insurance Fund. The aim is that this amount of money would be collected by the years 2002 - 2004. The agreement also states that from 01 January 1999, the state will finance an amount corresponding to the basic daily allowance of the earnings-related unemployment benefit and that the Unemployment Insurance Fund may incur debt in order to cover its expenses. With the aid of the Unemployment Insurance Fund, wage earners' and employers' unemployment insurance contributions can be kept unchanged for some years during economic recessions, thus relieving the unemployment situation. Let it be noted that the Unemployment Insurance Fund is not intended to ward off an economic depression. The best means for this end are a realistic economic policy, a small public sector deficit and financially sound enterprises.

2. Determination of a balanced membership fee covering the expenses of an unemployment fund

2.1 Unemployment rates and membership fees in recent years

Unemployment funds submit their membership fee proposals, based on instructions, to the Ministry of Social Affairs and Health (see appendix 1). After scrutiny of the proposals, the Ministry of Social Affairs and Health confirms the membership fee of the unemployment fund for the following year.

Figure 2. *Unemployment rate of unemployment funds by fields of activity.[3] The foremost column is the year 1993 and the hindmost column the year 1996*



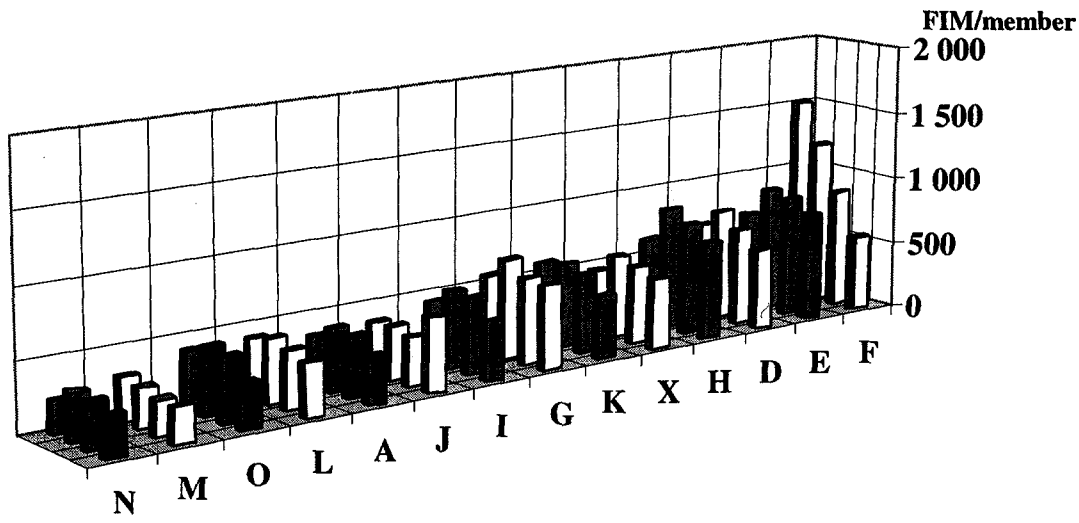
Unemployment funds have been classified into 14 categories of field of activity:[4]

A: agriculture, fishing, hunting and forestry;
D: industry;
E: electricity, gas and water supply;
F: construction;
G: wholesale and retail trade and repairing;
H: hotels and restaurants;
I: transport, storage and communications;
J: financial intermediation;
K: real estate, renting and business services;
L: public administration and defence;
M: education and research;
N: health and social work;
O: other community, social and personal services;
X: multibranch and unclassified activities.

[3] The unemployment rate describes the unemployment rate of members of funds belonging to a certain field of activity. In other words, it differs to some extent from the figures of the Ministry of Labour, which naturally include all the unemployed.

[4] The basis of classification is the field of activity of the majority of the members of an unemployment fund.

Figure 3. *Estimated annual membership fee of unemployment funds by fields of activity.[5] The foremost column is the year 1996 and the hindmost column the year 1993*



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The membership fee of an unemployment fund is based on the benefit costs at its responsibility and on the prevailing size of the equalisation reserve. As unemployment increases, the membership fees of unemployment funds rise (figures 2 and 3), because (a) the benefits paid by the fund increase and (b) the size of the equalisation reserve

[5] The estimated membership fee of unemployment funds has been obtained by dividing the membership fee receipts of an unemployment fund by its average number of members.

has to be increased. In addition, (c) the principal payment basis, the wage bill, is reduced.

Construction has had the highest unemployment rate of the fields of activity (figure 2). Also in hotels and restaurants, the unemployment rate has been over 20 per cent. In industry, construction and electricity, gas and water supply, the unemployment rate has come down in the last few years. It has gone up in financing and insurance activities, in real estate, renting and business service activities, in public administration and defence and in health and social services.

The membership fees of unemployment funds have varied considerably by fields of activity during the years 1993 - 1996 (figure 3). For instance, the average membership fees of the unemployment funds of the construction business (field F) have fallen during this period from FIM 1 500 to FIM 550. The membership fees of the unemployment funds of the financing and insurance branches (field J) have increased by nearly a half, from FIM 370 to FIM 540. By way of generalisation, it may be said that the greater the membership fee, the higher the unemployment rate of the fund.

2.2 Balanced membership fee of an unemployment fund

In connection with the reform of the earnings-related unemployment benefit, it might be expedient to define the annual membership fee with the aid of the so-called balanced membership fee and the changes of the equalisation reserve. While the annual membership fee is equal to the balanced membership fee, the equalisation reserve of the unemployment fund remains unchanged. If it is desired to increase (decrease) the equalisation reserve, the annual membership fee is greater (smaller) than the balanced membership fee. The balanced membership fee is calculated in principle in the same way as at present (see appendices 1 and 2).

The estimation of the balanced membership fee is facilitated by dividing the potential work-days of the fund members into two *different* groups: on one hand, the days of employment of the fund members and, on the other, their days of unemployment. The fund members have annually about 258 potential work-days, which can be divided into either days of employment or days of unemployment.[6] If the number of members of an unemployment fund is fairly constant, the days of employment of the fund members can be expressed by means of the fund members' days of unemployment. Thus, the balanced membership fee can be determined by means of the number of days of unemployment, the average wage level and the average earnings-related benefit (appendix 2).

[6] In reality, the division into days of employment and unemployment is not this simple, because the unemployed have so-called qualifying days, for which unemployment benefits are not paid. Each unemployment fund ought to assess the days of unemployment for which unemployment benefits are paid.

The balanced membership fee of an unemployment fund depends on the net expenses and membership fee basis of the fund. Formally, the balanced membership fee is defined as:

$$C^i_{TAS} = \frac{0{,}055\left(P^iT^i + M^i_k + B^i + C^i\right) + M^i_h + O^i - R^i - J^i}{W^i 258L^i - \left(W^i - P^i\right)T^i} \quad . \qquad (1)$$

The fund answers for 5.5 per cent of the expenses related to the unemployment of its members, the benefit cost of unemployment benefit[7] is $M^i_e = P^iT^i$ and the membership fee basis is $I^i_{MP} = W^iN^i + P^iT^i = W^i 258L^i - \left(W^i - P^i\right)T^i$, where

M_k ~ earning part costs of the earnings-related training support

B ~ job-rotation leave costs

C ~ training insurance costs

M_h ~ administration costs at the responsibility of the fund

O ~ membership fee of the support fund

R ~ return on investments

J ~ yield of equalisation of membership fees

W^i ~ average salary of employed members of the unemployment fund

N^i ~ number of days of employment of employed members of the unemployment fund

P^i ~ average earnings-related benefit of unemployed members of the unemployment fund

T^i ~ number of days of unemployment of unemployed members of the unemployment fund

L^i ~ number of members of the unemployment fund.

The membership fee realised in 1996 has been compared to the balanced membership fee in table 1.[8] For instance, in construction the realised membership fee percentage

[7] The benefit costs of unemployment benefit are divided into the number of benefit days and the daily benefit level. It would be necessary to make the corresponding division for the earning part costs of the earnings-related training support, job-rotation leave costs and training insurance costs.

[8] The membership fee of an individual unemployment fund in 1996 has been based on an appraisal, made in 1995, of the employment and earnings development of the members of the unemployment fund. The estimated membership fee percentage of an individual unemployment fund realised in 1996 has been calculated by dividing the membership fee receipts realised in 1996 by the membership fee basis. The membership fees by fields of activity have been calculated as a weighted average of the membership fees of individual unemployment funds. The relative number of members of the unemployment fund within the field of activity has been used as the weight.

was 0.69, while the balanced membership fee was 0.47 per cent. In almost all fields of activity, the realised membership fee has been greater than the balanced membership fee in 1996. Therefore, the equalisation reserves have increased during that year. The greatest differences between membership fee percentages have been in the following fields of activity: D (industry), E (electricity, gas and water supply), F (construction), J (financing and insurance), M (education and research) and X (multibranch and unclassified activities).

Table 1. The average realised and balanced membership fee of unemployment funds by fields of activity in 1996[9]

Field of activity	Realised membership fee percentage in 1996. Obtained by dividing membership fee receipts by membership fee basis	Balanced membership fee percentage in 1996
A: agriculture, fishing, hunting and forestry	0.37 %	0.37 %
D: industry	0.54 %	0.48 %
E: electricity, gas and water supply	0.69 %	0.47 %
F: construction	0.43 %	0.32 %
G: wholesale and retail trade and repairing	0.62 %	0.59 %
H: hotels and restaurants	0.95 %	0.92 %
I: transport, storage and communications	0.41 %	0.40 %
J: financial intermediation	0.51 %	0.42 %
K: real estate, renting and business services	0.61 %	0.56 %
L: public administration and defence	0.45 %	0.44 %
M: education and research	0.23 %	0.17 %
N: health and social work	0.26 %	0.23 %
O: other community, social and personal services	0.30 %	0.29 %
X: multibranch and unclassified activities	0.37 %	0.29 %

[9] Some individual unemployment funds levy a monthly membership fee, but here they are indicated at the annual level. If the membership fee of an individual unemployment fund was not percentage-based in 1996, an estimate was calculated for that fund as the membership fee percentage for 1996.

3. Long-term optimum level of the unemployment fund equalisation reserve

The objective in the determination of the long-term optimum level of the equalisation reserve of an unemployment fund is to maintain the annual membership fee of the unemployment fund fairly constant in conditions of "normal" economic fluctuation. If the optimum level of the equalisation reserve of an unemployment fund is very low, its annual membership fee follows closely a membership fee balancing its receipts and expenses. Because in a recession, with unemployment increasing, the membership fee receipts of an unemployment fund decrease and its benefit costs increase, the balanced membership fee grows in a recession. Respectively, it diminishes as employment improves. With the equalisation reserve acting as a buffer, the fluctuations of the annual membership fee can be moderated so that the unemployment fund equalisation reserve diminishes in a recession and grows during an upswing.

The determination of the long-term optimum level of the equalisation reserve of an unemployment fund is based on the amplitude of the expected recession. According to the study of Holm, Kiander and Tossavainen (1997), as Finland accesses the third phase of the EMU it might be expedient to provide for the expenses of about 100 000 more unemployed by means of the reserve.

The estimates of the long-term optimum level of the equalisation reserve are based on the following suppositions:

- The reserve is used to provide for the extra expenses of 160 000 more unemployed. If 50 per cent of them are entitled to earnings-related benefit, the unemployment funds must cope with the increase in unemployment of their members by 80 000 persons above the "normal level".
- The unemployment benefit costs of a new unemployed person are presumed to be FIM 50 000 per year. About FIM 4.0 thousand million more money will be required on the annual level. The unemployment funds' share of this is 5.5 per cent or about FIM 220 million.
- The increased unemployment reduces the membership fee receipts of the unemployment fund. If the average annual income of an employed person is FIM 105 000, the membership fee basis[10] falls by FIM 4.4 thousand million due to the increased unemployment (FIM 105 000 - FIM 50 000 = FIM 55 000, multiplied by 80 000 unemployed with earning benefit). If the average membership fee of unemployment funds is 0.6 per cent of salary, the membership fee receipts of unemployment funds are reduced by about FIM 26.4 million.
- The long-term optimum levels of the equalisation reserves of unemployment funds ought to be a total of about FIM 250 million, in order for them to be able to

[10] It is assumed that membership fees are levied also on the unemployed.

eliminate the effects of 80 000 new unemployed with earning benefit on the annual membership fees of unemployment funds.

While the equalisation reserves of unemployment funds are about FIM 250 million, the effects of 80 000 new unemployed on the membership fees of unemployment funds can be eliminated for a year. If, on the contrary, the increase in unemployment lasts, for instance, three years, reserves three times as great are required to prevent a rise of membership fees as a result of unemployment.

How is the need for reserves distributed among the fields of activity? As economic fluctuations vary by fields of activity and as the labour-intensiveness of the fields of activity varies clearly (Holm *et al.*, 1995 and 1997), unemployment funds are grouped into different fields of activity in accordance with the classification into fields of activity of the Ministry of Labour.

On the basis of the recent evolution of employment, the fields of activity have first been divided into two categories (appendix 2).

- The employment fluctuations of principally the open sector and the fields of activity serving it are estimated to be about 58 600 persons.
- The employment fluctuations of fields of activity principally producing services of the public good type are estimated to be about 21 400 persons.
- Within these two classes, employment fluctuations have been divided by fields of activity according to the recent evolution of employment. It is thought that employment will change in the conditions of a recession in the same proportion as it has changed in these fields of activity in the years 1993 - 1996.[11]

Table 2 presents the estimated long-term optimum levels of the equalisation reserves of the various fields of activity and their prevailing levels in 1996. The long-term optimum levels of the equalisation reserves of the fields of activity and their prevailing levels at the end of 1996 vary considerably in the different fields of activity.[12] The sizes of the equalisation reserves of fields of activity D (industry), E (electricity, gas and water supply), F (construction), I (transport, storage and communications), J (financing and insurance), K (real estate, renting and business service activities), L

[11] This is, of course, a simplifying presumption. It would undoubtedly be better to make a careful empirical analysis of the determination of employment in the various fields of activity. But this also involves problems. For example, situating an individual unemployment fund in a certain field of activity is difficult, because the funds have mainly been created in accordance with a professional division (i.e. the funds operate in association with trade unions).

[12] In 1997, the sizes of the equalisation reserves of individual unemployment funds have changed after the treatment of the deficit or the surplus of financial period 1996. If the income statement of an individual unemployment fund showed a surplus for the year 1996, this surplus is added in the bookkeeping of the fund to its equalisation reserve in 1997. If the income statement of an individual unemployment fund showed a deficit for the year 1996, this deficit has reduced the size of its equalisation reserve in such a way that a maximum of 50 per cent of the equalisation reserve can be used to cover the deficit of the previous year. If the statement of account remains on deficit even after this, funds of the support fund can be used to cover the deficit. If this does not suffice, either, the rest of the deficit is covered from the state extra subsidy.

(public administration and defence) , M (education and research), N (health and social services) and X (multibranch and unclassified activities) were greater than the long-term optimum levels at the end of 1996. The sizes of the equalisation reserves of other fields of activity were, in turn, smaller than their long-term optimum levels at the end of 1996.

Table 2. Long-term optimum levels of equalisation reserves and their sizes in different fields of activity in 1996

Field of activity	Long-term optimum level of equalisation reserve (FIM million)	Size of equalisation reserve on 31 Dec 1996 (FIM million)
A: agriculture, fishing, hunting and forestry	6.5	0.8
D: industry	8.2	35.1
E: electricity, gas and water supply	1.0	10.9
F: construction	66.1	107.4
G: wholesale and retail trade and repairing	11.5	5.6
H: hotels and restaurants	14.7	8.6
I: transport, storage and communications	3.7	5.3
J: financial intermediation	0.8	2.8
K: real estate, renting and business services	3.3	4.9
L: public administration and defence	12.0	17.1
M: education and research	1.7	18.5
N: health and social work	2.2	7.8
O: other community, social and personal services	2.9	1.6
X: multibranch and unclassified activities	3.2	26.5

In addition, it has been assumed that the equalisation reserves of unemployment funds belonging to the unclassified field of activity (X) are equal to that of a field of activity including other social and personal services (O).

On an average, the long-term optimum levels of the equalisation reserves are about 40 per cent lower than their levels in 1996. The equalisation reserves of funds have grown quickly during the past few years (appendix 2). If it is desired to provide for greater fluctuations of employment and/or for longer recessions, the equalisation reserves of unemployment funds must, of course, be greater. For example, the elimination of the membership fee effects of a recession lasting three years requires reserves three times as great.

3.1 Minimum and maximum sizes of unemployment fund equalisation reserves by fields of activity

The equalisation reserves of unemployment funds should have upper and lower limits. The maximum size of an equalisation reserve depends essentially on how long-term and/or great unemployment it is desired to prepare for in the future. The calculation of

the previous section was based on a recession lasting one year, with 160 000 new unemployed or, alternatively, on a recession lasting three years, with 53 000 new unemployed. In EMU conditions, it might be expedient in some cases to provide for a recession of three years and 160 000 unemployed. In this case, the equalisation reserve of an individual unemployment fund could temporarily be at a level three times as high as its long-term optimum level.

The minimum size of the equalisation reserve of an unemployment fund could be determined so as to provide for the seasonal variations of the receipts and expenses of the fund in all circumstances. In other words, by means of its equalisation reserve, an unemployment fund could in all circumstances pay its obligations without getting into temporary solvency problems. This research report assesses the seasonal variations of daily unemployment benefit on the basis of the daily allowance and rotating leave expenses paid monthly by unemployment funds[13] (hereafter 'daily allowance costs'). Thus, the presumption is that the annual overall daily allowance costs have been estimated right and that the fund receives an equal amount of receipts each month. In other words, seasonal variation is supposed to be relevant only for expenses. The seasonal variation appearing in the receipts of a fund, not examined here, also influences the determination of the minimum level.

First, on the basis of annual daily allowance costs, an average monthly daily allowance cost is calculated for the unemployment funds.[14] This average daily allowance cost is the sum of money which the unemployment fund would have to pay to its members if the monthly daily allowance costs were equal. Next, it is calculated how many per cent the real daily allowance costs paid monthly by the unemployment fund differ from the average monthly daily allowance cost. This percentage indicates how much above or below the average daily allowance cost the daily allowance costs paid monthly by the fund are. Finally, a cumulative sum for each year is calculated from these percentages. If the cumulative sum shows a deficit, the daily allowance costs of the unemployment fund are weighted in the early part of the year. If, on the contrary, the cumulative sum shows a surplus, the daily allowance costs of the unemployment fund are weighted in the latter part of the year, in which case, of course, the solvency problem does not arise. In both cases, the cumulative sum is zero at the end of the year.

The equalisation reserve balancing the seasonal variations of an unemployment fund means an equalisation reserve by means of which the unemployment fund can manage all "normal" seasonal variations of daily allowance costs. Among the fields of activity, the unemployment funds of construction have greater daily allowance costs in the early

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[13] The data on the daily allowance and rotating leave expenses paid monthly by unemployment funds have been obtained from the Ministry of Social Affairs and Health for the years 1994, 1995 and 1996. In addition to the daily allowance and rotating leave expenses, unemployment funds pay labour-political adult education expenses. These are of such a small order, in comparison to daily allowance and rotating leave expenses, that they have been left without consideration here.

[14] The annual daily allowance cost of an unemployment fund was obtained by adding up the monthly daily allowance costs. In this case, the daily allowance costs are gross daily allowance costs, i.e. they do not take into account possible corrections, such as refunds of daily allowances from previous years.

part of the year, due to seasonal variations, than in the latter part of the year. The seasonal variations of the daily allowance costs of unemployment funds would not cause solvency problems, if their equalisation reserves were at least as great as the daily allowance costs of two months paid by them.[15]

The minimum size of the equalisation reserve of an unemployment fund[16] can be calculated in the following manner: Let K^i be the cumulative sum of the relative difference (in relation to the average daily allowance cost) between the real monthly daily allowance costs and the average monthly daily allowances, and let us define KU^i as the maximum deficit percentage, i.e. $KU^i = \max(K^i)$. In this case, the minimum size of the equalisation reserve is

$$U^i_{MIN} = KU^i * (\frac{0{,}055 * M^i_e}{12}), \quad \text{if} \quad KU^i > 0 \qquad (2)$$

and

$$U^i_{MIN} = 0, \quad \text{if} \quad KU^i \leq 0,$$

where M_e = the daily allowance and job-rotation leave costs paid annually by the unemployment fund, while the unemployment fund's share of the daily allowance costs is 5.5 per cent.

Table 3 presents the minimum and maximum sizes of equalisation reserves of unemployment funds in different fields of activity. The minimum sizes of equalisation reserves have been estimated by means of formula (2), in such a manner, however, that a minimum of daily allowance costs of at least half a month at the responsibility of the fund has been defined for all funds. The temporary maximum has been defined as three times as great as the long-term optimum level.

[15] The majority of unemployment funds could also get by with an equalisation reserve smaller than this. Moreover, some unemployment funds would not, on the basis of the data of 1994, 1995 and 1996, need an equalisation reserve balancing seasonal variations at all.

[16] The minimum size takes into account the realised seasonal variations (cumulative deficits) of daily allowance costs in 1996. In this case, the minimum size of the equalisation reserve can also be zero, if the unemployment fund does not suffer from seasonal variations of daily allowance costs.

Table 3. Minimum and maximum sizes of equalisation reserves in 1996

Field of activity	Minimum size of equalisation reserve (FIM million)	Maximum size of equalisation reserve (FIM million)
A: agriculture, fishing, hunting and forestry	0.11	19.6
D: industry	0.77	24.7
E: electricity, gas and water supply	0.51	3.0
F: construction	9.25	198.4
G: wholesale and retail trade and repairing	0.62	34.4
H: hotels and restaurants	0.47	44.1
I: transport, storage and communications	0.63	11.2
J: financial intermediation	0.08	2.5
K: real estate, renting and business services	0.08	9.8
L: public administration and defence	0.15	36.1
M: education and research	0.21	5.1
N: health and social work	0.15	6.7
O: other community, social and personal services	0.04	8.8
X: multibranch and unclassified activities	0.26	9.6

In addition, it has been assumed that the equalisation reserves of unemployment funds belonging to the unclassified field of activity (X) are equal to that of the field of activity 'other social and personal services' (O).

Comparing the minimum sizes of the equalisation reserves to their currently prevailing sizes (table 2), it would appear that unemployment funds would cope very well with normal seasonal variations of daily allowance costs with equalisation reserves of the present size. Let us remember, however, that the definition of the minimum sizes should be reassessed from time to time, because the seasonal variations of daily allowance costs can change, for instance, due to the merger of unemployment funds. (Data of the years 1994, 1995 and 1996 on seasonal variations were used in this calculation of the minimum sizes of equalisation reserves.) The uneven distribution within the year of the receipts of an unemployment fund must also be taken into account.

In fields of activity D (industry), E (electricity, gas and water supply), M (education and research) and X (multibranch and unclassified activities), the equalisation reserves appear to be greater than the maximum level estimated here. The equalisation reserve of field of activity J (financing and insurance) is at present at about its maximum level. The equalisation reserves of other fields of activity are below their maximum levels.

4. Determination of the annual membership fee of an unemployment fund

Let us examine the determination of the membership fee estimated for the following year with the aid of the balanced membership fee and the long-term optimum level, the target level for the following year and the current level of the equalisation reserve. The long-term optimum level of the equalisation reserve is U^i_{TOI}. Let us define the target level of the equalisation reserve, U^i_{TAV}, defined annually by the Ministry of Social Affairs and Health, and the current level of the equalisation reserve, U^i_{NYK}, as a portion of the long-term optimum level, i.e.

$$U^i_{TAV} = \lambda U^i_{TOI} \tag{3}$$

$$U^i_{NYK} = \sigma U^i_{TOI} \tag{4}$$

where the coefficient λ (σ) indicates the quantity by which the target level (current level) of the equalisation reserve differs from the optimum level. The parameter σ^i can be estimated by comparing the current level of the equalisation reserve to its long-term optimum level. The parameter λ^i is based on the estimate of the Ministry of Social Affairs and Health on how much, due, for example, to the trade cycle situation, the target level for the following year of the equalisation reserve differs from the long-term optimum level.

The membership fee estimated for the following year must fulfil the following equation:

$$C^i I^i_{MP} \quad - \quad C^i_{TAS} I^i_{MP} \quad = \quad \lambda U^i_{TOI} \quad - \quad \sigma U^i_{TOI} \tag{5}$$

yield of membership fee with new membership fee	yield of membership fee with balanced membership fee	target level of equalisation reserve	current level of equalisation reserve

The membership fee of the following year is obtained as

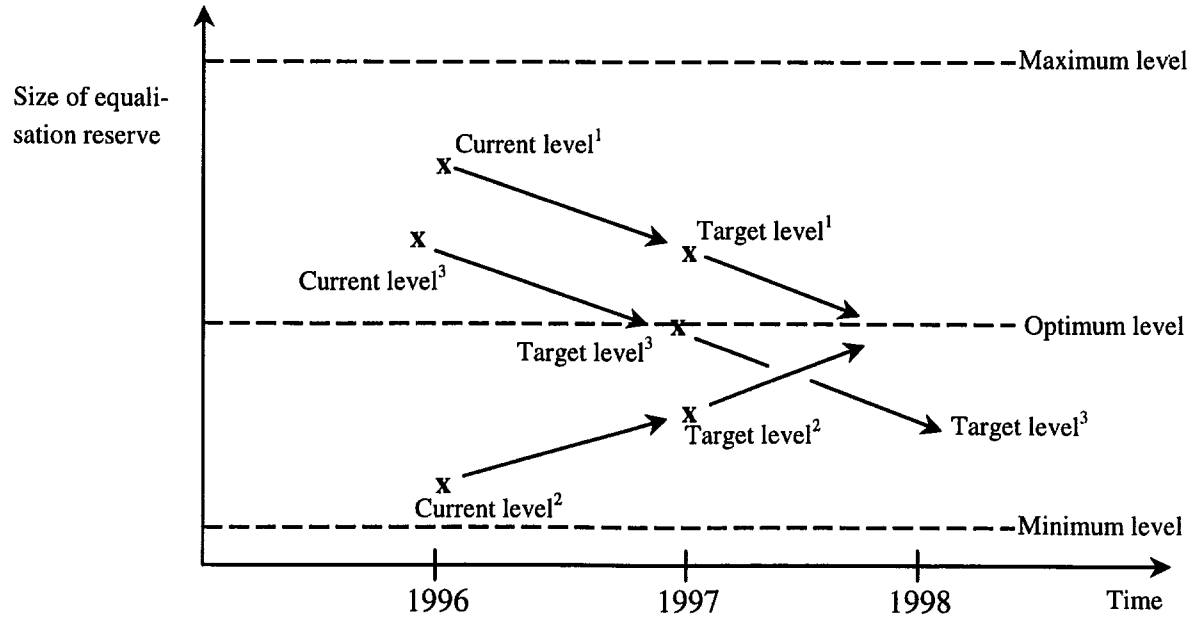
$$C^i = C^i_{TAS} + (\lambda^i - \sigma^i)\frac{U^i_{TOI}}{I^i_{MP}}. \tag{6}$$

When the annual target level of the equalisation reserve defined for the following year corresponds to its current level, there is no need to change the size of the equalisation reserve, and the membership fee of the following year is equal to the balanced membership fee. If the target level is higher (lower) than the current level, the annual membership fee is greater (smaller) than the balanced membership fee. The deviation of the annual membership fee from the balanced membership fee depends, in addition

to parameters σ and λ, on the ratio of the long-term optimum level of the equalisation reserve to the membership fee basis of the fund. The greater the membership fee basis compared to the optimum level of the equalisation reserve, the smaller the difference between the two membership fee concepts.

The functioning of the model can be illustrated with figure 4. Let us suppose a "normal" trade cycle situation 1, in which the current level of the equalisation reserve is above the long-term optimum level (i.e. $\sigma > 1$). In this case it is natural to define the annual target level of the equalisation reserve between the current and the optimum levels (i.e. $1 < \lambda < \sigma$). The annual membership fee is now smaller than the balanced membership fee, that is, the equalisation reserve gradually approaches the optimum level. Similarly, in situation 2, where the current level of the equalisation reserve is below the optimum level ($\sigma < 1$), it is natural to set the target level of the equalisation reserve between the current and the optimum levels (i.e. $\sigma < \lambda < 1$). Now the annual membership fee is greater than the balanced membership fee, with the equalisation reserve gradually approaching the optimum level.

Figure 4. *Long-term optimum level, annual target level and current level of equalisation reserve*



The effects of the deterioration of unemployment caused by an economic recession on the target size of the equalisation reserve are described in case 3. The growth of unemployment increases the costs of unemployment benefits and reduces the membership fee basis, with the balanced membership fee increasing. If the target level of the equalisation reserve is lower than the current level, the membership fee can be

kept smaller than the balanced membership fee by decreasing the equalisation reserve. If the recession lasts several years, there is reason to lower the target level of the equalisation reserve toward its minimum level (case 3). The minimum level of the equalisation reserve is determined, naturally, on the basis of the seasonal variation of the benefit costs and the membership fee receipts of the fund. The seasonal variation of receipts and expenses of the fund may not cause it solvency problems.

Finally, the proposed membership fee is compared by fields of activity to the membership fee prevailing in 1996 (table 4).[17] The proposed membership fee of a field of activity has been calculated so that the target level for the following year of the equalisation reserve of a field of activity is always in the middle of the current and the optimum levels. This means that the equalisation reserve of a field of activity is assumed to balance within two years on to its long-term optimum level.

Table 4. Membership fee in accordance with the proposed formula and membership fee prevailing in 1996 in different fields of activity

Field of activity	Weighted value of σ (current level/ optimum level)	Weighted value of λ (annual target level/optimum level)	Average membership fee according to the proposed formula (%)	Average realised membership fee (%)
A: agriculture, fishing, hunting and forestry	0.4	0.7	0.49	0.37
D: industry	4.0	2.5	0.33	0.54
E: electricity, gas and water supply	10.9	5.9	0.29	0.69
F: construction	1.6	1.3	0.10	0.43
G: wholesale and retail trade and repairing	0.9	0.9	0.61	0.62
H: hotels and restaurants	0.6	0.8	1.01	0.95
I: transport, storage and communications	1.7	1.4	0.37	0.41
J: financial intermediation	5.3	3.1	0.37	0.51
K: real estate, renting and business services	1.5	1.3	0.46	0.61
L: public administration and defence	1.9	1.4	0.40	0.45
M: education and research	10.9	5.9	0.08	0.23
N: health and social work	4.3	2.7	0.18	0.26
O: other community, social and personal services	0.8	0.9	0.39	0.36
X: multibranch and unclassified activities	8.3	4.6	0.16	0.37

[17] The membership fees of a field of activity have been calculated as the weighted average of the membership fees of funds. The relative sizes of the funds, measured by the number of members, within the field of activity have been used as the weights.

It can be seen in the table how much the membership fee of the proposed model differs from the membership fee prevailing in the different fields of activity in 1996. The membership fees of the proposed model differ, in several fields of activity, from the membership fee prevailing in 1996. In many cases the deviations are substantial. It seems that in the fields of activity the current level of whose equalisation reserve is above (below) the long-term optimum level, also the realised membership fees have been greater (smaller) than the membership fees of the proposed model. For example, the field of activity of industry (D), the size of whose equalisation reserve is distinctly greater than the optimum level, has levied a membership fee greater than the balanced membership fee. Thus, the equalisation reserve of this field of activity has grown even greater (see appendix 2).

5. The Unemployment Insurance Fund as an EMU buffer

The labour market organisations noted on 22 May 1997 in their joint statement that the labour market and the whole national economy must prepare for economic disturbances in circumstances no longer permitting alterations of exchange rates. Such a situation will arise after the start of the third phase of the EMU on 01 January 1999, when the countries participating in the monetary integration of the EU proceed to the use of a common currency, the Euro. The reports of the EMU expert working party,[18] among others, concluded that the fluctuations of the economies of the countries participating in the EMU were not symmetrical. It was particularly emphasised that the fluctuations of the Finnish economy have differed from those of continental Europe (e.g., Germany and France) with respect to timing and amplitude.

The central labour market organisations mutually concluded on 17 November 1997 a buffer agreement aiming at absorbing economic disturbances in conditions of a common currency. In the unemployment benefit system, the buffer agreement is intended to moderate the fluctuations of the unemployment insurance contributions of employers and wage earners by means of the Unemployment Insurance Fund (former Central Fund). The aim is that by the years 2002 - 2004, a fund amounting to about FIM three thousand million be collected from employers and wage earners in unemployment insurance contributions. According to the agreement, the fund may also get into debt in a recession.

At present, the state pays 47.5 per cent of the daily allowance costs as per a permanent law. From the beginning of 1999, the state will pay a fixed sum for each day of allowance. It was also agreed in the buffer agreement that state payments will be fixed at a certain level. If this level is exceeded due to the increase of allowance days, the state will be compensated for the growth of earning benefit expenses from the Unemployment Insurance Fund.

Starting from 1999, the members of unemployment funds will pay their membership fees directly to the unemployment funds, just as before. The determination of the state subsidy will change so that the state will only pay the part of unemployment benefit expenses regarded as basic security. In 1999, the state subsidy will be about FIM 120 per day of unemployment, however, not more than about FIM 5.2 thousand million.[19] Wage earners' and employers' unemployment insurance contributions will be paid into the Unemployment Insurance Fund, from which the unemployment insurance contribution of wage earners not belonging to unemployment funds will be accounted

[18] The Monetary Union and Finland - Challenges to the Economy. Final report of the EMU expert working party 06 May 1997. Publications of the Office of the Council of State, 1997.

[19] In the budget of 1998, the state subsidy to unemployment funds (including earnings-related daily allowances and job-rotation leave compensations) is about FIM 3.9 thousand million (Ministry of Social Affairs and Health 33.17.50), while FIM 300 million has been budgeted to the optional training of the unemployed (Ministry of Social Affairs and Health 33.17.53) and FIM 975 million to labour-market adult training (Ministry of Labour 34.06.50). These items together add up to a state subsidy of about FIM 5.2 thousand million.

to the Social Insurance Institute for the part of the benefits financed by the Unemployment Insurance Fund which they are not entitled to. The employers' unemployment insurance contribution and the rest of the wage earners' unemployment insurance contribution will be accounted, in conformity with payment orders, to unemployment funds which will further pay them out to their members entitled to earnings-related benefit.

5.1 The Unemployment Insurance Fund and a hypothetical economic recession

Let us next examine the dynamics of operation of the Unemployment Insurance Fund in a hypothetical economic recession.

It should be stressed at the outset that the presented calculations are not economic forecasts, but examples of the dynamics of operation of the Unemployment Insurance Fund. Let us examine the hypothetical situation of the Unemployment Insurance Fund in the years 2000 and 2005. Let us suppose that in 2000 FIM 1.0 thousand million has been collected in the Unemployment Insurance Fund and FIM 3.0 thousand million in 2005. Let us suppose that the Finnish economy is first faced with an economic disturbance lasting three years, in which employment deteriorates by 40 000 persons per year during the first and second year and then improves by 40 000 persons per year during the third and fourth year. After one normal year, the example presents a precisely equal positive disturbance in the economy. Employment first improves for two years by 40 000 persons per year, after which the normal situation is regained in two years. In other words, the duration of the trade cycle of the national economy is eight years. If a half of the new unemployed and of the new employed are members of funds, the calculation provides for changes of 80 000 unemployed belonging to the system.[20]

Let us examine the effects of such an economic disturbance i) on both employers' and wage earners' unemployment insurance contributions, if the unemployment insurance system has not been buffered, and ii) on the size of the buffer of the unemployment insurance system, if the employers' and wage earners' unemployment insurance contributions are kept constant during the disturbance.

The following simplifying assumptions have been made in the analysis:

- All employers are thought to pay an equal unemployment insurance contribution of the wage bill.
- The average employee and unemployed are being examined.

[20] This calculation corresponds in order of magnitude to the calculation of chapter 3. The equalisation reserve calculations of unemployment funds provide for about 80 000 unemployed within the purview of the earning benefit system. The Unemployment Insurance Fund calculation provides for about 80 000 unemployed with earning benefit ((40 000 + 80 000 + 40 000) * 0.5 = 80 000). The fact that the temporal emphases of the calculations differ from each other, does not affect the estimates on the size of the funds.

- Economic disturbances, changes in unemployment insurance contributions and in the size of the Unemployment Insurance Fund do not affect the formation of wages. It is also assumed that changes in the employer's unemployment insurance contributions do not affect the demand of labour.
- The analysis does not take a stand on how the unemployment insurance contribution is distributed between employers and wage earners.

Exemplary calculation 1 (table 5), emulating the situation of the year 2000, is made with the following basic data:

- The state subsidy for the costs of the earning-dependent unemployment insurance system is FIM 120 per day of unemployment.
- Employers and wage earners answer for the rest of the costs of the earning-dependent unemployment insurance system.
- Employment plummets at the very beginning of the year and only improves at the end of the year, giving 258 days as the duration of unemployment per one unemployed (the calendar year has about 258 unemployment benefit days).
- The total share of unemployment funds of the unemployment funds' expenses is 5.5 per cent.[21]
- 50 per cent of the new employed and the new unemployed are within the purview of earning-dependent unemployment insurance.
- The number of employed persons before the disturbance is 2 240 000 and that of unemployed persons 270 000.
- The average annual earnings of the employed are FIM 120 000 and those of the unemployed belonging to the earning-dependent system FIM 53 000.
- The total expenses of the Unemployment Insurance Fund, including, in addition to the daily allowance costs, employee pension extra, wage security, training and severance funds and other expenses of the Unemployment Insurance Fund, are assumed to be dependent of the number of the unemployed. As the share of daily allowance costs of the total expenses of the Unemployment Insurance Fund is about 55 per cent, the total cost occasioned by one unemployed is 1.8 * FIM 53 000.
- The size of the Unemployment Insurance Fund is FIM 1.0 thousand million in the year 2000.
- The Unemployment Insurance Fund may incur debt in order to cover its expenses.
- The employers' unemployment insurance contribution is 2.8 per cent of the employee's salary and the employees' 1.4 per cent of the salary, giving a total of 4.2 per cent levied on the salary. This in the case that the fund is allowed to vary.

[21] The share of unemployment funds is 5.5 per cent, if, in addition to daily allowance costs, only adult training and training insurance costs are considered. Considering all items financed with unemployment insurance contributions, the unemployment funds' share is about four per cent.

The results of the calculation are reported in table 5. Appendix 3 presents formally the size of unemployment insurance contributions levied on the salary as employment changes, and the size of the Unemployment Insurance Fund as the employment situation changes, while unemployment insurance contributions remain unchanged.

Table 5. Exemplary calculation of the effects of a negative and a positive economic disturbance lasting three years; the basic data aim at emulating the situation of the year 2000

Year	Difference from normal of number of unemployed 1	Difference from normal of expenses of Unemployment Insurance Fund (FIM thousand million) 2	Unemployment insurance contribution levied on salary (%) 3	Difference from normal of budget of Unemployment Insurance Fund (FIM thousand million) 4	Size of Unemployment Insurance Fund (FIM thousand million) 5
0	0	0	4.2	0	1.00
1	40 000	1.18	4.7	-1.39	-0.39
2	80 000	2.37	5.3	-2.77	-3.16
3	40 000	1.18	4.7	-1.39	-4.54
4	0	0	4.2	0	-4.54
5	-40 000	-1.18	3.7	1.39	-3.16
6	-80 000	-2.37	3.2	2.77	-0.39
7	-40 000	-1.18	3.7	1.39	1.00
8	0	0	4.2	0	1.00

If the rise in unemployment is not provided for by reserve funding, a rise of 80 000 persons in the unemployment of fund members raises unemployment insurance contributions by 1.1 percentage points (column 3). A rise of 40 000 persons in unemployment raises unemployment insurance contributions by 0.5 percentage points. During an upswing, unemployment insurance contributions can, in turn, be lowered correspondingly.

If, on the other hand, the budget of the Unemployment Insurance Fund is allowed to be either on surplus or on deficit, unemployment insurance contributions can be kept constant and independent of economic fluctuations. The fluctuations of the Fund are presented in column 5. Unemployment insurance contributions can be kept unchanged in the examined economic cycle, if the size of the Fund can vary by about FIM 5 thousand million.

Exemplary calculation 2 (table 6), emulating the situation of the year 2005, is made with the following data:

- The state subsidy for the costs of the earning-dependent unemployment insurance system is FIM 120 per day of unemployment.

- Employers and wage earners answer for the rest of the costs of the earning-dependent unemployment insurance system.
- Let us examine the duration of the average unemployment. In other words, employment plummets at the very beginning of the year and only improves at the end of the year, giving 258 days as the duration of unemployment per one unemployed (the calendar year has about 258 unemployment benefit days).
- The total share of unemployment funds of the unemployment funds' expenses is 5.5 per cent.
- 50 per cent of the new employed and of the new unemployed are within the purview of earning-dependent unemployment insurance.
- The number of employed persons before the disturbance is 2 330 000 and that of unemployed persons 200 000.
- The average annual earnings of the employed are FIM 135 000 and those of the unemployed belonging to the earning-dependent system FIM 57 500.
- The total expenses of the Unemployment Insurance Fund, including, in addition to the daily allowance costs, employee pension extra, wage security, training and severance funds and other expenses of the Unemployment Insurance Fund, are assumed to be dependent of the number of the unemployed. As the share of daily allowance costs of the total expenses of the Unemployment Insurance Fund is about 55 per cent, the total cost occasioned by one unemployed is 1.8 * FIM 57 500.
- The size of the Unemployment Insurance Fund is FIM 3.0 thousand million in the year 2005.
- The Unemployment Insurance Fund may incur debt in order to cover its expenses.
- The employers' unemployment insurance contribution is 2.1 per cent of the employee's salary and the employees' 0.7 per cent of the salary, giving a total of 2.8 per cent levied on the salary. This in the case that the fund is allowed to vary.

Table 6. Exemplary calculation of the effects of a negative and a positive economic disturbance lasting three years; the basic data aim at emulating the situation of the year 2005

Year	Difference from normal of number of unemployed 1	Difference from normal of expenses of Unemployment Insurance Fund (FIM thousand million) 2	Unemployment insurance contribution levied on salary (%) 3	Difference from normal of budget of Unemployment Insurance Fund (FIM thousand million) 4	Size of Unemployment Insurance Fund (FIM thousand million) 5
0	0	0	2.8	0	3.00
1	40 000	1.33	3.3	-1.48	1.52
2	80 000	2.65	3.8	-2.95	-1.43
3	40 000	1.33	3.3	-1.48	-2.91
4	0	0	2.8	0	-2.91
5	-40 000	-1.33	2.3	1.48	-1.43
6	-80 000	-2.65	1.9	2.95	1.52
7	-40 000	-1.33	2.3	1.48	3.00
8	0	0	2.8	0	3.00

If the rise in unemployment is not provided for by reserve funding, a rise of 80 000 persons in unemployment raises unemployment insurance contributions by 1.0 percentage points (column 3). A rise of 40 000 persons in unemployment raises unemployment insurance contributions by 0.5 percentage points. During an upswing, unemployment insurance contributions can, in turn, be lowered. If, on the other hand, the budget of the Unemployment Insurance Fund is allowed to be either on surplus or on deficit, unemployment insurance contributions can be kept constant and independent of economic fluctuations. The fluctuations of the Fund are presented in column 5. The unemployment insurance contributions can now be kept unchanged in the examined economic cycle, if the size of the Fund can vary by a little less than FIM 6 thousand million.

5.2 Collection of the Unemployment Insurance Fund

Let us next examine the collection of the Unemployment Insurance Fund and the evolution of employment in the economic growth scenario of the next few years, in which it is presumed that the growth of the national economy will slow down as per the medium-term prognoses of the Ministry of Finance[22] till the year 2001. It is presumed that after this economic growth will further slow down till the year 2004.[23]

[22] Forecasts of the Ministry of Finance for the years 1997 - 2001 include the change of the GDP, the change of employment and the unemployment rate.

[23] The calculations presented in the study are not economic forecasts for the next few years, but scenarios of what will happen to the size of the Unemployment Insurance Fund in the near future, if unemployment insurance contributions are maintained on the 1998 level and if they are lowered. The size of the Unemployment Insurance Fund is estimated for the years 1997 - 2004.

Let us first examine the development of total production and employment in the years 1990 - 1995, provisional data for 1996 and forcasts for the years 1997 - 2001.

Table 7. Total production, employment and unemployment in the years 1990 - 2001

Year	Change of GDP volume, %	Change of employ-ment, %	Employ-ment, 1000 persons	Unemploy-ment, 1000 persons	Unemploy-ment rate, %	Surplus of Central Fund, FIM million	Employers' unemploy-ment insurance contri-butions, %	Wage earners' unemploy-ment insurance contri-butions, %
1990	0.0	0.2	2 351	88	3.4	425	0.6	0
1991	-7.1	-5.2	2 229	193	7.6	-2 064	1.4	0
1992	-3.6	-7.0	2 073	328	13.1	-1 988	3.7	0
1993	-1.2	-6.3	1 942	444	17.9	-2 225	5.7	0.2
1994	4.5	-0.8	1 927	456	18.4	2 472	5.0	1.87
1995	5.1	2.2	2 068	430	17.2	3 551	4.6	1.87
1996E	3.3	1.4	2 096	408	16.3	19	2.9	1.5
1997e	4.5	1.9	2 135	360	14.4	-	2.9	1.5
1998e	3.6	1.9	2 176	327	13.0	-	2.8	1.4
1999e	3.5	1.5	2 208	302	12.0	-	-	-
2000e	3.0	1.4	2 239	276	11.0	-	-	-
2001e	2.8	1.3	2 268	252	10.0	-	-	-

Sources: Statistics Finland, European Commission, Ministry of Finance. E is provisional data for 1996 and e forecasts for the years 1997 - 2001. The employers' charges for the years 1993 - 1998 are estimates of the average magnitude of employers' charges. The wage earners' unemployment insurance contribution was levied for the first time in 1993.

In the beginning of this decade, Finland was caught in the worst economic crisis of its independence. For instance, total production slumped in the years 1991 - 1993 by about 12 per cent, and during the same period the unemployment rate rose from 7.6 to 17.9 per cent. The level of unemployment has remained at over 300 000 persons since 1992, and presumably will in 1998 as well. The next few years will reduce the number of the unemployed, but in the light of present knowledge it appears that unemployment will go down slowly. The most important single variable affecting the size of the Unemployment Insurance Fund in the years 1998 - 2001 is the evolution of the employment situation.

The Ministry of Finance estimated in June 1997 that total production will grow in 1997 4.5 per cent and in 1998 3.6 per cent. After this, the growth of total production will turn to a slight decline so that in 2001 total production will grow 2.8 per cent. Employment will improve at first, but after the slackening of the growth of total production, also the growth of employment will slow down. The supply of labour will grow by an average of 0.3 per cent in the years 1998 - 1999 and by an average of 0.2 per cent in the years 2000 - 2004, because people will enter the labour market from training. When the next government starts in office 1999, the unemployment rate would seem to be around 12 per cent and in 2001 around 10 per cent. How will the estimated size of the Unemployment Insurance Fund evolve in these circumstances in the years 1997 - 2004?

The following assumptions have been made in the examination of the years 1997 - 2004:

- All employers are thought to pay an equal unemployment insurance contribution on the wage bill.
- The average employee and unemployed are being examined.
- Changes in the size of the Unemployment Insurance Fund do not affect wage formation.
- The supply of labour grows by 0.3 per cent both in 1998 and in 1999. After this, the supply of labour grows by 0.2 per cent a year till the year 2004.
- Changes of unemployment insurance contributions do not affect wage formation or have effects on employment.
- The state's share of financing earnings-related unemployment benefits[24] has been fixed at the 1998 level at the maximum. In this case, the state's share of financing the total costs of earning-dependent unemployment benefits is a maximum of FIM 5.2 thousand million. In other words, the state pays FIM 120 per day of unemployment, however, not more than FIM 5.2 thousand million.
- Real wages increase annually about 1.5 per cent.
- The share of the unemployed with earnings-related benefit of all the unemployed is 50 per cent on an average. 75 per cent of the employed are members of unemployment funds.
- Total production grows in the years 1997 - 2004.
- The average annual earnings of the unemployed belonging to the earnings-related system is FIM 53 000. In this case, the total cost of one unemployed person, out of the total expenses of the Unemployment Insurance Fund, is 1.8 * FIM 53 000. The total cost for the state is an estimated 1.35 * FIM 53 000, because the state does not pay, for instance, employee pension extras or wage security expenses.
- The share of the state, employers and wage earners of the total expenses of earnings-related unemployment benefits is 94.5 per cent. The employers' and wage earners' share of the total expenses of earnings-related unemployment benefits is 54 per cent in 1998 before the change of determination of the state contributions.
- The payment basis of the employers' unemployment insurance contribution is different from that of the wage earners. The difference is due to the fact that the state does not pay the employer's unemployment insurance contributions.

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[24] 'Earnings-related unemployment benefits' mean earnings-related daily unemployment allowances, job-rotating leaves, labour-market adult training and the optional training of the unemployed. In next year's budget, the state subsidy to unemployment funds (including earnings-related daily allowances and job-rotation compensations) is about FIM 3.9 thousand million (Ministry of Social Affairs and Health 33.17.50), while FIM 300 million has been budgeted to the optional training of the unemployed (Ministry of Social Affairs and Health 33.17.53) and about FIM 975 million to labour-market adult training (Ministry of Labour 34.06.50). These items together add up to a state subsidy of about FIM 5.2 thousand million.

- An estimated half of the wage earners' unemployment insurance contributions remains at the disposal of the Unemployment Insurance Fund.

Table 8 reports the results. The calculation formulae are presented in appendix 4.

Table 8. Estimated evolution of the size of the Unemployment Insurance Fund in the years 1997 - 2004, if unemployment insurance contributions are lowered

Year	Change of employ-ment %	Employ-ment 1000 persons	Unem-ploy-ment rate %	Change of wages %	Wage bill of employ-ers' unem-ployment insur-ance contri-butions FIM thousand million	Wage bill of wage earners' unem-ployment insurance contri-butions FIM thousand million	State subsidy FIM thousand million	Size of fund FIM thousand million	Wage earners' unem-ploy-ment insur-ance contri-bution % of salary	Employ-ers' unem-ployment insurance contri-bution % of salary
1997		2 135	14.4		214.5*	231.0*	5.2	1.67	1.5	2.9
1998	1.9	2 176	13.0	1.5	221.9	239.0	5.1	1.13	1.4	2.8
1999	1.5	2 208	12.0	1.5	228.6	246.1	4.7	1.18	1.4	2.8
2000	1.4	2 239	11.0	1.5	235.2	253.3	4.3	1.41	1.2	2.6
2001	1.3	2 268	10.0	1.5	241.9	260.5	3.9	1.72	1.0	2.4
2002	1.0	2 290	9.3	1.5	248.0	267.0	3.6	2.29	0.9	2.3
2003	0.8	2 309	8.7	1.5	253.7	273.2	3.4	2.98	0.8	2.2
2004	0.6	2 323	8.4	1.5	259.0	279.0	3.3	3.60	0.7	2.1

Sources: Ministry of Social Affairs and Health, Statistics Finland, Ministry of Finance.

* The wage bills of columns 5 and 6 differ from one another. The reason for the difference is that the state does not pay the employer's unemployment insurance contributions.

If the economic development of the next few years is favourable, as has been presumed, unemployment insurance contributions can be brought down from the current level. In 1998 and 1999, they could remain at their current level. After that, they could be lowered gradually till the year 2004, when they would total about three per cent of the wage bill. The Unemployment Insurance Fund would, at its smallest in 1999, be a little over FIM one thousand million, after which its size would seem to grow to about FIM 3.6 thousand million in 2004. As a result of the increase in employment and the decrease in unemployment, the expenses of the state for the financing of the earnings-related unemployment benefits would be reduced from FIM 5.2 thousand million to FIM 3.3 thousand million.

6. Conclusions

This study examines the reformation of the determination of the membership fees of unemployment funds, the determination of the equalisation reserves of unemployment funds as well as the operation of the Unemployment Insurance Fund and the determination of its size. In the determination of the membership fees of unemployment funds, the so-called balanced membership fee covering the expenses of the unemployment fund is examined first. When the membership fee is equal to the balanced membership fee, the size of the equalisation reserve of the unemployment fund remains unchanged. After this, the long-term optimum level of the unemployment fund equalisation reserve is defined. When the equalisation reserve is equal to its optimum level, the membership fee can be maintained stable in "normal" economic recessions by means of it. Finally, the determination of the annual membership fee is examined, taking into account the balanced membership fee and how much the target level confirmed annually by the Ministry of Social Affairs and Health and its prevailing level at any one time differ from the optimum level. When defining the target level of the equalisation reserve, the unemployment situation of the individual unemployment fund must be assessed. In a recession, the target level ought to be below the balance level and in an upswing above it.

During the years 1994 - 1996, the equalisation reserves of unemployment funds have grown in most fields of activity, particularly in industry, construction and public administration and defence. In industry, electricity, gas and water supply, education and research and multibranch activities (including unclassified fields of activity), the size of the equalisation reserve appears to be greater than necessary. The membership fees calculated in accordance with the model proposed in the report differ, at times substantially, from the levied membership fees. In the fields of activity in which the current level of the equalisation reserve is above (below) the long-term optimum level, the realised membership fees have been greater (smaller) than the membership fees of the model proposed in the report.

The size of the Unemployment Insurance Fund has been estimated in the case of a hypothetical recession lasting three years, in which the unemployment of the members of the funds increases during the first two years by 20 000 persons a year and during the third and fourth year by 20 000 persons a year. If the changes in unemployment are not allowed to affect the size of the Unemployment Insurance Fund, the rise in unemployment increases the unemployment insurance contributions of wage earners and employers by a total of about 1.1 percentage points. The unemployment insurance contributions can be kept constant, if the size of the Fund can vary by about FIM 5 thousand million.

If the evolution of the economy and of employment remain favourable till the year 2004, surplus will be accumulated in the Unemployment Insurance Fund, and this surplus can be used to balance the fluctuations of unemployment insurance contributions in possible future recessions. The size of the Unemployment Insurance

Fund depends most on the improvement of employment and the magnitude of the unemployment insurance contributions levied on the wage bill during the years 1998 - 2004. The sought Unemployment Insurance Fund of about FIM 3.0 thousand million in 2004 can be attained, even if unemployment insurance contributions were to go down gradually from the current 4.2 per cent to 2.8 per cent.

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APPENDICES

APPENDIX 1: DETERMINATION OF MEMBERSHIP FEE OF AN UNEMPLOYMENT FUND IN THE CURRENT SYSTEM

In the current system, with 5.5 per cent of the unemployment benefit expenses of the members of a fund at its responsibility, the lower limit $C^i_{\min}$ and the upper limit $C^i_{\max}$, based on the instructions of the Ministry of Social Affairs and Health, for the membership fee of unemployment fund i are defined as follows:

$$C^i_{\min} = \frac{Z^i}{P^i_s}\left\{0{,}055\left(M^i_e + M^i_k + B^i + C^i\right) + M^i_h + O^i - R^i - J^i\right\} - \frac{50U^i}{P^i_s} \qquad \text{(A1)}$$

$$C^i_{\max} = \frac{Q^i}{P^i_s}\left\{0{,}055\left(M^i_e + M^i_k + B^i + C^i\right) + M^i_h + O^i - R^i - J^i\right\} - \frac{100U^i}{P^i_s}, \qquad \text{(A2)}$$

where

M_e ~ unemployment benefit costs,

M_k ~ earning part costs of the earnings-related training support,

B ~ job-rotation leave costs,

C ~ training insurance costs,

M_h ~ administration costs at the responsibility of the unemployment fund,

O ~ membership fee of the support fund,

R ~ return on investments,

J ~ yield of equalisation of membership fees,

P_s ~ "wage bill" forming the basis of membership fees, and

U ~ size of the equalisation reserve of the unemployment fund.

Z and Q ~ coefficients prescribed by the Ministry of Social Affairs and Health (the greater the benefit cost at the responsibility of the fund, the smaller the coefficient).

The unemployment fund equalisation reserve U is further:

$$U^i = X^i 0{,}055\left(M^i_e + M^i_k + B^i + C^i\right), \qquad \text{(A3)}$$

where X^i ~ the coefficient prescribed by the Ministry of Social Affairs and Health (the greater the benefit cost at the responsibility of the fund, the smaller the coefficient).

In the current system, the membership fee of an unemployment fund is based on the benefit cost at its own responsibility and on the prevailing level of the equalisation reserve. Special features in the bases of determination are the coefficients confirmed by the Ministry of Social Affairs and Health. The wage bill does not include the earnings of unemployed fund members, although they also have to pay membership fees to unemployment funds.

APPENDIX 2: DETERMINATION OF MEMBERSHIP FEE OF AN UNEMPLOYMENT FUND IN THE PROPOSED SYSTEM

The model proposed in the report divides the balanced membership fee and the equalisation reserve of an unemployment fund apart from each other. The balanced membership fee of unemployment fund i is defined as:

$$C_{TAS}^{i} = \frac{0{,}055\left(M_{e}^{i} + M_{k}^{i} + B^{i} + C^{i}\right) + M_{h}^{i} + O^{i} - R^{i} - J^{i}}{I_{MP}^{i}}, \qquad \text{(A4)}$$

where the membership fee basis is:

$$I_{MP}^{i} = W^{i} N^{i} + P^{i} T^{i}.$$

In the membership fee basis, in turn:

W^i ~ average wage of employed members of the unemployment fund,

N^i ~ number of days of employment of employed members of the unemployment fund,

P^i ~ average earnings-related of unemployed members of the unemployment fund, and

T^i ~ number of days of unemployment of unemployed members of the unemployment fund.

The unemployment benefit cost can also be written as $M_{e}^{i} = P^{i} T^{i}$.

The fund members' potential working days can be divided into days of employment and unemployment.[25] If there are 258 potential working days in the year and if the number of members of a fund is L^i, then

$$258\, L^{i} = N^{i} + T^{i}. \qquad \text{(A5)}$$

In other words, if the number of members of the unemployment fund is fairly constant, the days of employment of its members can be expressed by means of their days of unemployment. In this case, the balanced membership fee can be determined by means of the number of days of unemployment, the mean wage level and the average earning benefit as follows:

[25] In reality, the division into days of employment and unemployment is not this simple, because the unemployed have so-called qualifying days for which unemployment benefits are not paid. Each unemployment fund should assess the days of unemployment for which unemployment benefits are paid.

$$C^i_{TAS} = \frac{0{,}055\left(P^iT^i + M^i_k + B^i + C^i\right) + M^i_h + O^i - R^i - J^i}{W^i 258L^i - \left(W^i - P^i\right)T^i} \qquad \text{(A6)}$$

Above, unemployment benefit costs have been divided into the number of days of benefit and the daily benefit level. It would be necessary to make a similar distinction for the earning part costs of the earnings-related training support, job-rotation leave costs and training insurance costs. This would improve information on the generality of the use of these measures and facilitate the supervision of the funds.

Let us next examine the determination of the annual membership fee with the aid of the balanced membership fee and the annual target level, the long-term optimum level and the current level of the equalisation reserve. Let us suppose that the long-term optimum level of the equalisation reserve is U^i_{TOI} (we shall return later to the definition of this). Let us express the target level of the equalisation reserve U^i_{TAV} and the current level U^i_{NYK} as a proportion of the optimum level, i.e.

$$U^i_{TAV} = \lambda U^i_{TOI} \qquad \text{(A7)}$$

$$U^i_{NYK} = \sigma U^i_{TOI} \qquad \text{(A8)}$$

where the coefficient λ (σ) indicates the quantity by which the target level (current level) of the equalisation reserve differs from the optimum level. The parameter σ^i can be estimated by comparing the current level of the equalisation reserve to its long-term optimum level. The parameter λ^i is based on the estimate of the Ministry of Social Affairs and Health on how much, due, for instance, to the trade cycle situation, the target level of the equalisation reserve estimated for the following year differs from the long-term optimum level.

The annual membership fee estimated for the following year must realise the following equation:

$$\underset{\substack{\text{yield of membership}\\ \text{fee with new}\\ \text{membership fee}}}{C^i I^i_{MP}} - \underset{\substack{\text{yield of membership}\\ \text{fee with balanced}\\ \text{membership fee}}}{C^i_{TAS} I^i_{MP}} = \underset{\substack{\text{target level of}\\ \text{equalisation reserve}}}{\lambda U^i_{TOI}} - \underset{\substack{\text{current level of}\\ \text{equalisation reserve}}}{\sigma U^i_{TOI}} \qquad \text{(A9)}$$

The annual membership fee of the following year is now obtained as

$$C^i = C^i_{TAS} + \left(\lambda^i - \sigma^i\right)\frac{U^i_{TOI}}{I^i_{MP}}. \qquad \text{(A10)}$$

The objective in the determination of the long-term optimum level of the equalisation reserve of an unemployment fund is to maintain its annual membership fee fairly constant in conditions of "normal" economic fluctuation. If the optimum level of the equalisation reserve of an unemployment fund is very low, the annual membership fee follows closely a membership fee balancing its receipts and expenses. Because in a recession, with unemployment increasing, the membership fee receipts of the unemployment fund decrease and its benefit costs increase, the balanced membership fee grows in a recession. Respectively, it diminishes as employment improves. With the equalisation reserve of the unemployment fund acting as a buffer, the fluctuations of the annual membership fee can be moderated. The unemployment fund equalisation reserve ought to diminish in a recession and grow during an upswing.

According to the study of Holm, Kiander and Tossavainen (1997), as Finland accesses the third phase of the EMU it might be expedient to provide for the expenses of about 100 000 more unemployed. Let us suppose that the expenses of 160 000 more unemployed are provided for by reserve funding. Of these unemployed, about 80 000 can be presumed to belong within the purview of the earnings-related unemployment benefit system. As the annual expenses for one unemployed person are an average of FIM 50 000, the expenses brought about by the new unemployed are about FIM 4.0 thousand million. Of this, the expenses of unemployment funds are about FIM 220 million. Unemployment also reduces the receipts of unemployment funds. As the average annual earnings of an employed person are about FIM 105 000, the membership fee basis diminishes, due to the increased unemployment, by FIM 4.4 thousand million. The average membership fee percentage of the funds being 0.6, their receipts also diminish by about FIM 26.4 million. In this case, the total size of the equalisation reserves of unemployment funds ought to be about FIM 250 million.

While the equalisation reserves are about FIM 250 million, the effects of a recession lasting a year, with 160 000 unemployed - of whom 80 000 are assumed to be fund members -, on the annual membership fee can be eliminated. If the recession lasts three years, reserves three times as great are required to prevent a rise of membership fees as a result of unemployment.

How is the need for equalisation reserves distributed among the fields of activity? As economic fluctuations vary by fields of activity and as the labour-intensiveness of the fields of activity varies clearly (Holm et al., 1995 and 1997), unemployment funds are grouped into 13 fields of activity in accordance with the classification of the Ministry of Labour. (The Ministry of Labour classifies 18 fields of activity, but here the four smallest ones and the category 'unknown' have been omitted.)

Appendix table L1. The distribution of the 80 000 more unemployed by fields of activity

	Employment reservation of fields of activity
A Agriculture, fishing, hunting and forestry	2 980
D Industry	15 300
E Electricity, gas and water supply	320
F Construction	22 400
G Wholesale and retail trade and repairing	9 800
H Hotels and restaurants	4 700
I Transport, storage and communications	3 100
Total	58 600
J Financial intermediation	430
K Real estate, renting and business services	2 030
L Public administration and defence	13 600
M Education and research	540
N Health and social work	1 700
O Other community, social and personal services	3 100
Total	21 400
Total	80 000

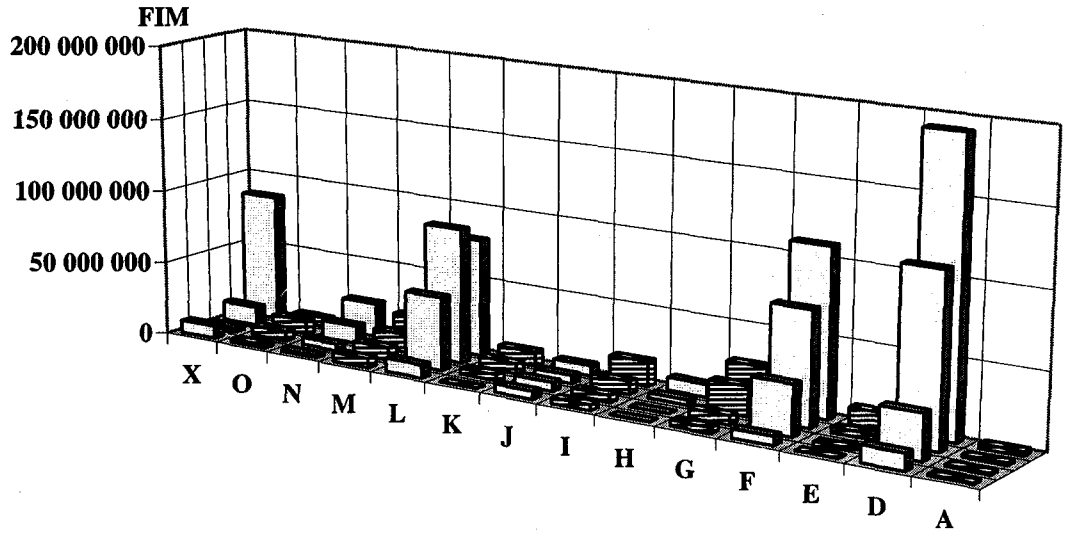
On the basis of the recent evolution of employment, the fields of activity have been divided into two categories (appendix table L1). The employment fluctuations of the first category, principally the open sector and the fields of activity serving it, are estimated to be 58 600 unemployed and of the second, fields of activity principally producing services of the public good type, about 21 400 unemployed.

Within these two classes, employment fluctuations have been divided by fields of activity by means of the recent evolution of employment. It is thought that employment will deteriorate in the conditions of a recession in the same proportion as it has improved in the various fields of activity.[26] The greatest fluctuations in employment would seem to be in industry, construction, wholesale and retail trade and in public administration and defence. The provision for employment effects in public administration and defence would appear to be oversized in the traditional view. If the good financing position of the public economy cannot be utilised as a buffer, employment is likely to vary in the future in the public sector as well, particularly as the EMU criteria prevent the public sector from running into debts.

How have the equalisation reserves of funds developed in recent years in the various fields of activity? Traditionally, the equalisation reserves have been very small. It is only in the last few years (appendix figure L1) that the size of the equalisation reserves of some fields of activity has started to grow. Such fields of activity are public administration and defence, construction and industry.

[26] In estimating the future evolution of employment, it must be remembered that the evolution of employment is not necessarily symmetrical between good and bad times. In other words, past evolution is not a guarantee of the future.

Appendix figure L1. Sizes of equalisation reserves of unemployment funds by fields of activity.[27] The foremost column is the year 1993 and the hindmost column the year 1996



Unemployment funds have been classified into 14 categories of field of activity:

A: agriculture, fishing, hunting and forestry;
D: industry;
E: electricity, gas and water supply;
F: construction;
G: wholesale and retail trade and repairing;
H: hotels and restaurants;
I: transport, storage and communications;
J: financial intermediation;
K: real estate, renting and business services;
L: public administration and defence;
M: education and research;
N: health and social work;
O: other community, social and personal services;
X: multibranch and unclassified activities.

[27] The sizes of the equalisation reserves of fields of activity in appendix figure L1 have been obtained by adding up the sizes of the equalisation reserves of the unemployment funds of a field of activity. The sizes of the equalisation reserves of appendix figure L1 differ from the calculations of chapter 3, where weighted averages were used. The relative number of members of an unemployment fund within a field of activity was used as the weight.

APPENDIX 3: SIZE OF UNEMPLOYMENT INSURANCE CONTRIBUTION LEVIED ON SALARY AS EMPLOYMENT SITUATION CHANGES

The new size s^u of the unemployment insurance contribution levied on the salary can be calculated with the formula

$$s^u = \frac{\Delta x + (s^v) * A_L * L^v}{A_L(L^v - y)} \qquad \text{(A11)}$$

where Δx is the change from normal of the expenses of the Unemployment Insurance Fund (in FIM), y is the difference from normal of the number of the unemployed, s^v is the old unemployment insurance contribution, A_L the average annual earnings of the employed and L^v the number of the employed in a normal economic situation.

The change from normal of the expenses of the Unemployment Insurance Fund can be calculated with the formula

$$\Delta x = \mu * (1{,}8 * \alpha * y * A_u) - (\alpha * y * A_p) \qquad \text{(A12)}$$

where μ is the financing share of wage earners, employers and the state of the total expenses of the earnings-related unemployment insurance system, α is the unemployed fund members' share of all the unemployed, A_u the average annual earnings of those receiving earnings-related unemployment benefit and A_p the annual earnings of the unemployed on basic daily allowance. In order to estimate the total effects of one unemployed person on the expenses of the fund, the earnings of the unemployed person must be multiplied by the coefficient 1.8.

The difference from normal of the budget of the Unemployment Insurance Fund can be calculated with the formula

$$p = \Delta x + (s^v * A_L * y). \qquad \text{(A13)}$$

The size of the Unemployment Insurance Fund enabling the maintenance of wage earners' and employers' unemployment insurance contributions throughout an economic disturbance at the level prevailing before the disturbance is obtained by adding up the budget differences for the years of disturbance.

APPENDIX 4: ESTIMATED SIZE OF THE UNEMPLOYMENT INSURANCE FUND IN THE YEARS 1997 - 2004

The expenses of the Unemployment Insurance Fund (TVR) in the years 1997 and 1998 can be estimated with the formula

$$TVRM_{97,98} = \beta * (1{,}8 * A_u * \alpha * (\overline{L} - L)), \qquad (A14)$$

where β is the wage earners' and employers' financing share of the total costs of the earnings-related unemployment insurance system (54%), A_u the average annual earnings of those receiving earnings-related unemployment benefit (FIM 53 000), α the share, of all the unemployed, of the unemployed receiving earnings-related benefit (50%), $\overline{L}$ the supply of labour and L employment. Similarly, the receipts of the TVR in the years 1997 and 1998 can be estimated with the formula

$$TVRT_{97,98} = ((S_p * 0{,}75) + S_t) * A_L * L \qquad (A15)$$

where S_p is wage earners' unemployment insurance contribution, the coefficient 0.75 is the estimated share of the wage earners' unemployment insurance contribution remaining with the Unemployment Insurance Fund, S_t employers' unemployment insurance contribution and $A_L * L$ the wage bill. From 1999, when the state's financing share changes, the expenses of the Unemployment Insurance Fund can be estimated with the formula

$$TVRM = [\mu * (1{,}8 * A_u * \alpha * (\overline{L} - L)] - M_v, \qquad (A16)$$

where μ is the wage earners', employers' and the state's financing share of the total costs of the earnings-related unemployment insurance system (94.5%) and M_v the state's share of the total costs of the earnings-related unemployment benefit system. The state's share is determined in the following manner: If 120 * 258 * $(\overline{L} - L)$ > FIM 5.2 thousand million, then the state's share M_v = FIM 5.2 thousand million. If, again, 120 * 258 * $(\overline{L} - L) \leq$ FIM 5.2 thousand million, then the state's share M_v = 120 * 258 * $(\overline{L} - L)$.

Similarly, the receipts of the Unemployment Insurance Fund from the year 1999 onwards can be estimated with the formula

$$TVRT = [(\gamma * S_p) + S_t] * A_L * L \qquad (A17)$$

where γ is the share of the employed belonging to unemployment funds (75%), S_p wage earners' unemployment insurance contribution and S_t employers' unemployment insurance contribution.

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