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Simulation-Models Describing the Dutch Unemployment Insurance

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I. Introduction

During the 1980's there has been a continuous public debate on the level and the cost of unemployment and social security in The Netherlands. Like in other European countries, the public debate was a consequence of the worsening condition of the economy after the so-called second oil-crisis of 1979. Unemployment has risen rapidly from 200.000 in 1980 to 650.000 in 1985 (14 % of the labour-force). In 1986, Parliament passed legislation to reform the social security system from 1987 onwards. Not only were benefits reduced, but more typically benefits were redistributed. This redistribution, as we will further call the fine-tuning of the social security system, has been one of the central elements of the legislation passed in Parliament during 1986. Unemployment benefits have become more differentiated by length of employment-record, age, income, household situation etc.

For the policy making process the fine-tuning policy has had a number of consequences. In the beginning of the 1980's, macro-models were used to forecast effects of policy measures. Those macro-models and related statistical information are too limited to describe effects of anticipated policy measures (see SOCIAL AND CULTURAL PLANNING BUREAU, 1985; DE KAM, WIEBRENS, and VAN 'T EIND, 1987). This necessitated the improvement of models and statistical tools. During the last six years meso- and micro-simulation models have been developed on specific fields of social security to meet the information requirements resulting from the "fine-tuning" of the social security system (means-tested programs, employment-record, the duration of entitlement under various age-duration schemes).

More recently research has been started on the application of artificial intelligence in the field of simulation of consequences of policy-measures (see MINISTRY OF SOCIAL AFFAIRS AND EMPLOYMENT, 1986 b). This system, which we will call an "expert-system", will be developed in the coming years and it is one stage beyond the more conventional micro-simulation models.

In this paper we will discuss the developments in modelling and potential use of expert-systems in the field of social security. Most examples used in this paper will deal with the unemployment insurance. *Appendix I* presents a summary of the most important aspects of this insurance and related legislation. Section 2 discusses recent developments in the system of social security. Section 3 discusses the development of models at the of *Social Security Division*. In this section, the step towards application of artificial intelligence is incorporated. Section 4 presents some experiments with the models. Section 5 discusses possible effects of the application of the tools discussed.

II. Recent Developments in the System of Social Security

In the beginning of the 1980's, the unemployment insurance-system was relatively simple. The former *Unemployment Insurance Act* granted a benefit for a maximum period of 2,5 year for every person unemployed who had worked at least half a year. The benefit equals 80 % of the last wage during the first 0.5 year and 75 % during the following 2 years. During the 1980's, there has been a major change in policy in the social security system due to the worsening condition of the economy and the related growth of unemployment. These economic problems resulted in the need for cuts in public spending. An overall reduction of social security benefits and a reform of the social security system both contributed to the cuts in social security spending. The reform was also meant to protect specific groups of beneficiaries against a considerable fall in income. This implied that specific categories of potential beneficiaries have to be defined and this has resulted in a redistribution of benefits. These items, a cut in social security spending and the redistribution of benefits, have dominated the discussion in the field of social security and, specifically, of the *Unemployment Insurance Act* during the last 8 years. We label this attempt as "fine-tuning" of the social security system. In *Appendix I*, the system, as far as it is relevant in the scope of this paper, has been described and special attention is given to the variables which determine the level and duration of the unemployment insurance benefit.

The process of policy decision has become more and more complex due to fine-tuning and this has a number of consequences. First, more statistical data are needed. The existing data are insufficient to answer specific questions on specific categories of unemployment. There is a lack of information on, for example, items as the age-distribution of beneficiaries, income-distribution, unemployment-duration, household-situation, and probabilities of leaving unemployment. Second, new models have to be developed. The models used in the beginning of the 1980's have become inadequate to describe possible effects of political choices and predictions on the expected volume of beneficiaries and the total amounts of social security expenditures involved.

This lack of knowledge has resulted in two simultaneous actions. The first was the development of new models to describe the *Unemployment Insurance Act* and related acts like the *National Assistance Act*. Simultaneously, necessary data were defined in order to fill empirical knowledge gaps in the developed (disaggregated) models. In the following sections we will first discuss the development of models. Second, we present some experiments with the models. The related discussion on improvement of quantitative data remains out of the scope of this paper.

III. Recent Developments of Modelling in the Field of Unemployment

3.1. Disaggregation of Models

The models used at the Department in the beginning of the 1980's had - in general - the following form:

(1) $f = n \times p + v$

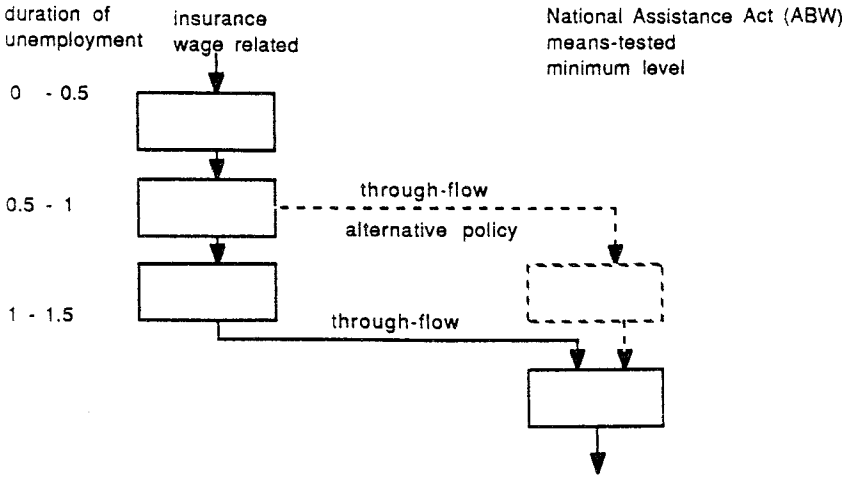
in which f represents the necessary budget, n the volume of beneficiaries, p the average benefit, and v the other cost-elements like administrative costs. The variables n, p, and v were extrapolated and the expected budget f results. Such a model cannot be used for calculating effects of a fine-tuning-policy. In 1983, a model has been developed which can generate effects for a number of specified categories. This model is a flow-model with 5 age-categories, and empirically it is based on administrative data and additional administrative research on flow figures. The model describes the lowest aggregational level possible, given deficiencies in the statistical material at that time. The model allows to calculate effects on the volume of beneficiaries of different alternative benefit-policies. For example, it may calculate effects of the differentiation of the maximum duration of entitlement. The model has the following general structure:

(2) $n_{ji} = \beta_{ji}\, n_{j-1,i}$

in which n_{ji} represents the number of unemployed of duration-category j and age-category i, and ßji the probability of remaining unemployed for a next specified period (0.5 year). The duration-category n_{ji} is distributed over the volume of beneficiaries of the *Unemployment Insurance Act* and the *National Assistance Act* (ABW) (see *Appendix I*). Depending on the age category, the flow between insurance and assistance is at different duration of unemployment. The model, thus, also informes the decision-

maker on the effect of the policy on flows between insurance and assistance. Schematically, the model is presented in *Figure 1*. It is a static model and it has been assumed that the number of people becoming unemployed, as well as the probabilities of remaining unemployed, remain constant (stationarity). This states the most important feature of the calculation of effects: predicted effects of different policies are compared with each other.

Figure 1
Flow-Model of Unemployment



The model needs improvement for two reasons. First, the new *Unemployment Insurance Act* introduced in 1987 has elements which were not modelled in the first flow model (among other elements the condition on employment-record; see *Appendix I*). Second, the act newly introduced has more categories of maximum duration than the first model could handle. This has resulted in two disaggregation stages. First, a new model with 10 age categories has been developed. Second, the model distincts different reasons for being entitled: a throughflow from a preceding scheme because of reaching the maximum duration of entitlement of that preceding scheme, a throughflow after 0.5 year unemployment benefit because of not fulfilling the condition of an employment record of 3 years during the last 5 years (the so-called 3-5-condition; see *Appendix I*), and a direct inflow from employment, without a foregoing benefit.

As has been said, the system of social security has been changed from a global system into a more sophisticated system with different entitlements for different categories. Effects of specific elements of the system could not be calculated with the meso-flow-model discussed before. Those elements were approached with micro-simulation models (see for results: MINISTRY OF SOCIAL AFFAIRS AND EMPLOYMENT, 1986 a). Such a model has been applied on a survey of unemployed on employment-records (the number of labour-years in the years preceding unemployment). The proposed *Unemployment Insurance Act* has been translated into a set of formulae which simulate the decision-process on the level and duration of the benefit. The model especially answers questions like whether the beneficiary's employment-record is sufficient to fulfill the condition of allowing an insurance benefit for more than half a year (3-5-condition; see *Appendix I*).

This simulation model has been structured to calculate the effects on the budget and the volume of beneficiaries of other possible employment-record conditions (4-5, 2-5 etc.).

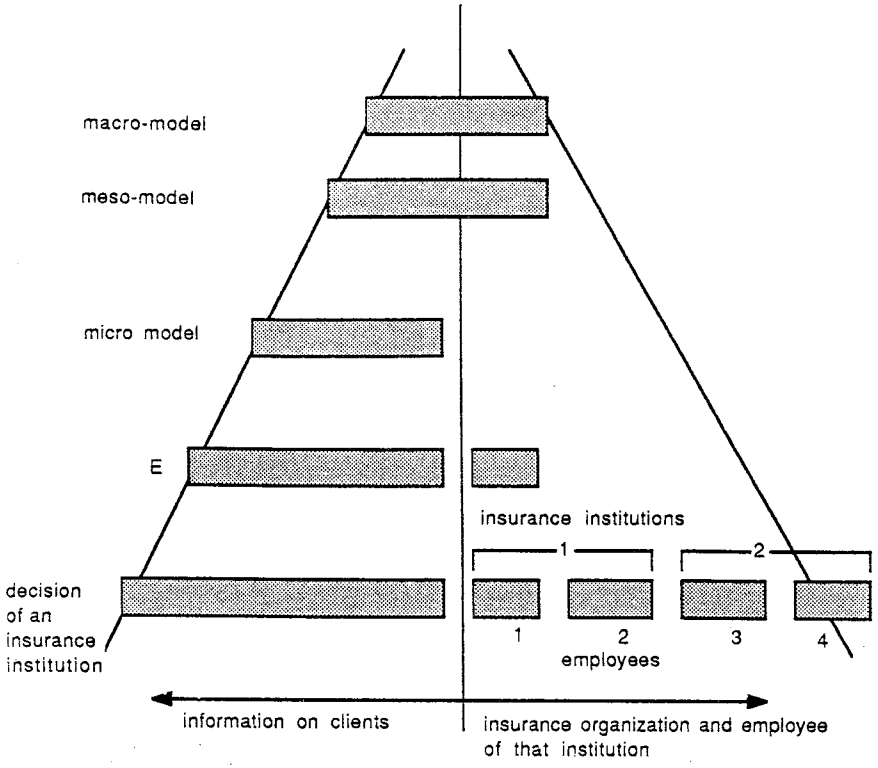
Other simulation models were developed with regard to means tested programmes (see Ipso Facto, 1987) and to the effect of the limitation of maximum duration of entitlement on the volume of beneficiaries (see BACK and VAN 'T EIND, 1984). The simulation on maximum duration has only been meant as a test on the operational use of such models in the policy-making process.

3.2. The Step Towards Artificial Intelligence

Employees of insurance institutions take decisions on the level and duration of the benefit for specific clients. Every client is considered a different case. The decision taken depends on objective variables like last earned wages, employment-record, etc. Further, the decision is influenced by subjective variables like the interpretation on the clients reason of being unemployed, his or her job search activities etc. The number of objective and subjective variables necessary for a decision depends on the act involved and the incorporated elements. All models mentioned in section 3.1. are meant to describe those decisions and to aggregate them so that the total volume of beneficiaries and the total amount involved results. However, the different models have a considerable difference in degree of abstraction. The macro-model only incorporates the average decision on the level of the benefit and the resulting volume of beneficiaries. The meso-model incorporates the average decision on duration, the number of beneficiaries at the beginning of the spell of unemployment, and the decision on leaving the insurance. The microsimulation models describe the decision process as good as possible on specific area's of the unemployment insurance (the employment-record, means testing). Other area's in a particular micro-model are described globally

and, therefore, the micro-model remains an abstraction of the final overall decision. The decision and the abstraction can be represented by a pyramid of bars with the length of the bars representing the information used. The top of the pyramid is the macro-model, the bottom is the decision of (an employee of) an insurance organisation with respect to a particular client. In *Figure 2*, the pyramid is shown.

Figure 2
The Decision Process at the Individual Level and its Abstractions



In *Figure 2* the information of the client is separated from the interpretation of (the employee of) the insurance-institution by a vertical line. Both categories of information

together result in a decision with respect to the client involved. At the macro-level only aggregated and very global information is used, since it is not possible to make a distinction between client-information and the employee's interpretation. The meso-model uses information on a lower level of aggregation. This is represented by a longer bar lower in the pyramid. At the micro-level, only client-information is used. The information is on the level of an individual client and comes from surveys as well as from administrative data. It is not possible at this level to model the interpretation of the employee. This is because the choice of an employee is a random-process which cannot be predicted at the level of policy making.

Figure 2 suggests that an overall decision cannot be simulated exactly with a macro-model unless the insurance is simple and all clients as well as employees are homogeneous. Going downstairs in the pyramid, the simulation of the decision process comes closer to reality, but still it will be an abstraction, even at the micro-level.

There remains a large gap between the micro-level and the exact decision of the employee of an insurance-institution. This gap results from a number of facts. First, the employee has specific information on a client and can decide accordingly. The level of the benefit not only depends on variables like last earned wages, but also on job-search activities, educational activities, the interpretation of the household situation (unmarried couples vs. two individuals living in the same house without sharing a household). This implies that the level is also influenced by the interpretation of an employee of an insurance institution, and such information can hardly be handled by a micro-model.

The second gap is that the micro-model only describes the part of the act in which the policy-maker is particularly interested, while other parts will be simplified or even neglected. Otherwise, the model will become too large and unpracticable to work with. We should not forget that the model is built in order to change specific parameters in the system of unemployment benefits, and to calculate effects of such a change in parameters. If, however, different micro-models describing different parts of a particular act could be constistently matched and, every article would have its own micro-simulation model, the decision-process could be simulated exactly as far as it concerns client information. This can be represented in *Figure 2* by a bar between the micro-model and the actual decision. The necessary condition for a consistent matching of micro-models is that the computer has knowledge of the act, relations between various articles, jurisprudence and dependencies between the different micro-models. Going one step further, this matching will be simplified when the computer can also compile a simple written abstraction of a legislative article in machine-code. Then we have an expert-system which can be used to simulate the decision-process as exactly as possible. At this moment, the DIVISION OF SOCIAL SECURITY is experimenting with such an expert system, of which the silhouette will be discussed below.

3.3. The Expert-System Described

The expert-system now being developed by the SOCIAL SECURITY DIVISION has two basic elements:

1) the so-called knowledge base and
2) the functions necessary to use the knowledge base.

The knowledge base in the social security expert-system will consist of the social security acts, the relations between these acts, jurisprudence etc. Experts in the field of social security define the knowledge base in order to combine the existing knowledge. This will garantee the best possible description of the social security system. The language in which the knowledge base will be programmed is very flexible and easy to learn. It is, therefore, relatively easy to describe different policy-options and generate new knowledge bases. The expert-system has a number of functions. Some of those functions are meant to analyse legal problems. The other functions to analyse socio-economic consequences of changes of the act.

One of the main "legal" functions is what we call the interpretation function. This function interprets the consequences of different policy options on the basis of special selected and constructed cases (case law). The different policy options can be analysed by changing parts of the knowledge base. One of the interesting features of the expert-system is that it will also generate an explanation of the reasons why a certain outcome is reached. The interpretation function is used on a selected sample of cases to analyse the legal consequences of different policy options.

In essence, the same procedure can be used in a micro-model. The only difference (in principle) is the fact that for micro-simulation purposes a random sample of cases will be used to calculate the effects of policy changes for the total population. It simply requires that the interpretation function must be used on every single case consecutively. The macro-effects can then be calculated by aggregating the individual results of the micro-simulation. Since both the socio-economic and the legal policy measures are evaluated by the same expert-system, this new tool can be used to integrate legal and socio-economic policy making.

There are two other main functions of the expert-system which will mainly be used in the legal policy making.

First. Within the framework of the expert-system there will be a consinstency function. It will be used to test constistency between different parts of the act. The unemployment act is complex and it is not always straightforward to realize whether a reform of part of the act is consistent with other parts of the act. The expert-system is also meant to check the consistency of an anticipated change in the act with the remaining elements of the act.

Second. There is a function which is meant to save the knowledge on dependencies between parts of the (different) acts. There are many dependencies between as well as within acts. The dependencies are known and are important but are not always remembered. The expert-system can present an overview of such dependencies.

An example describes the application of the expert-system. Off-shore workers of Dutch Nationality are not entitled to an unemployment insurance benefit. A suggested reform is to include those individuals. A change of the unemployment act is necessary and several alternative reforms can be considered. There are different models of labour contracts in the off-shore industry. Therefore, several cases have to be examined. The interpretation-function can be used for verifying that the effects of the changes on the cases are as intended.

By applying the consistency function it can be checked that the change is not inconsistent with other parts of the act. By using the simulation function it can be examined whether the reform has undesirable effects on other (not off-shore) cases and finally with the macro function it will be possible to estimate the aggregated volume and financial effects.

Although the expert-system will be a powerful instrument for the policy making process, there are certain limitations. Even if the organization structure is optimal and the system is well maintained, questions can always be put which the system cannot answer. The limitations are at least threefold: First, there are limitations of the data used by the system. A change of an act can include new elements which are not in the data. In the process of data gathering all essential elements of the present acts and elements which might become important are included. However, there are limitations in the amount of data gathered and it is therefore possible that particular variables are missing.

Second, the range of the expert-system is limited. The connections between several acts are part of the system but it is not possible to incorporate the interdependencies of all acts. In some cases it will not be possible to forecast the effects of a change in income-related subsidies (in the Netherlands housing-subsidies and subsidies on student-maintenance) or tax to be paid, etc.

Third, a serious limitation (not only of the expert-system but also of the other models mentioned) is the implicit assumption that behaviour like job-search-activities is not influenced by a reform of an act.

The first two limitations will become less serious as the expert-system and the data gathered will improve. However, it is not possible to cope with the third problem unless the underlying micro-models incorporate the behaviour of individuals.

IV. Application of the Models

In the preceding section we have presented an overview of the models developed at the SOCIAL SECURITY DEPARTMENT DIVISION. The models have been used in order to calculate effects of changes in parameters of the *Unemployment Insurance Act* and the *National Assistance Act* on the volume of beneficiaries. In this section we will show some of the experiments that have been done during the past years.

In *Appendix I* we have described the *Unemployment Insurance Act* and the related legislation. The three most important parameters in the system are the maximum duration of entitlement of the insurance (related with the length of the employment-record: the number of labour-years), the 3-5-condition (the maximum duration of a wage-related benefit is limited to 0.5 year if the beneficiary has worked less than 3 years during the 5 years preceding unemployment) and the means-test in the *National Assistance Act*. The micro-models are meant to experiment with alternative conditions on the employment-record and with alternative means-tests. The results of the experiments are incorporated in the meso-model as parameters (probabilities of remaining entitled for one of the acts and probabilities of starting an entitlement). As such, the meso-model is the glue between the micro-models.

In *Table 1* the percentage of beneficiaries is presented which fulfills the condition on the employment-record. The table shows that under a 4-5-condition 54 % of the new beneficiaries are entitled to a benefit of more than 0.5 year. This percentage increases to 70 % and 81 % when the condition is reduced to 1 and 2 years, respectively. The table further shows a relation between age and percentage of entitlement. The percentage of entitlement of the 3-5-condition, for example, increases from 53 % to 91 %.

Table 1

Percentage of Beneficiaries at the Beginning of a Spell of Unemployment Entitled for More than 0.5 Year by Age-Category

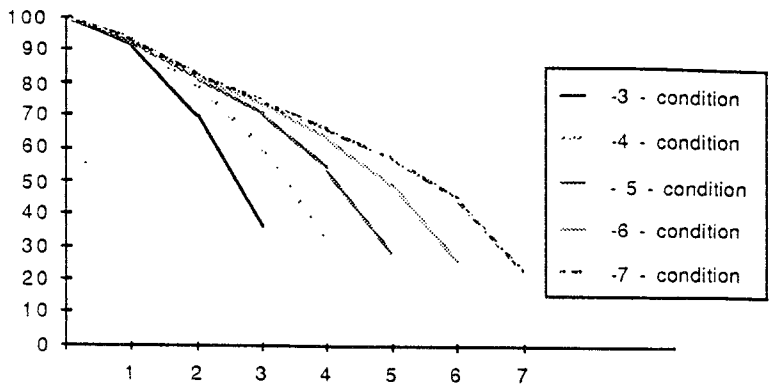
Age-category/condition	4-5	3-5	2-5
0 - 29	34	53	67
30 - 39	69	83	93
40 - 49	70	85	94
50 - 64	81	91	96
total	54	70	81

Source: MINISTRY OF SOCIAL AFFAIRS AND EMPLOYMENT, 1986 a.

Figure 3 presents a complete view on all possible conditions on the employment-record. In the figure 5 curves are drawn. The horizontal axis represents the number of labour-years necessary to be entitled for a benefit of more than 0.5 year. The vertical axis represents the percentage of entitlement. The figure shows a considerable decrease of percentage of entitlement when increasing the number of labour-years. Further, it shows an increase of the percentage of entitlement when the number of years is increased in which those labour-years have to be concentrated.

Figure 3

Percentage of Beneficiaries at the Beginning of a Spell of Unemployment Entitled for More than 0.5 Year



In *Table 2*, the effect of alternative tests on property on the percentage of individuals entitled for a *National Assistance Act* benefit is presented. The present day act allows 15.000 guilden to be free of testing. The table shows an increase in the percentage of entitlement. The increase is moderate when going from variant 1 to variant 3. The increase is considerable when going to variant 1 and from variant 3 to variant 4.

Table 2

Effects of Alternative Test on Property on the Percentage of Entitlement for a National Assistance Act Benefit

	present day act	policy option 1	policy option 2	policy option 3	policy option 4
entitled	61.4	62.8	63.4	63.4	65.0
non entitled	38.6	37.2	36.8	36.6	35.0
	100	100	100	100	100

present day act: 15.000 gld free of testing
1: without test on investment in owner-occupied houses
2: step 1 + 30.000 guilders
3: step 1 + 60.000 guilders
4: without test on property

Source: Ipso Facto, 1987.

The percentage rates in the preceding tables are used in the meso-flow-model. In *Table 3*, the results of some experiments with this model are presented. The model calculates the volume of beneficiaries under experimented legislation. In the table the effect is shown on the volume of entitled persons of the wage-related benefits (the insurance), as well as on the volume of entitled persons of the minimum benefit (last year of the *Unemployment Insurance* and *National Assistance Act*).
The meso-model is the glue between various micro-models. This glue, however, is not a perfect one. An example will explain this point. The effect of the employment-record condition and the effect of means-tested programmes in the meso-model are based on the two micro-models presented above.

Both micro-models are based on different survey-data files. Further there are two flows between the untested *Insurance* and the means-tested *Assistance Act*: after 0.5 year as a result of not fulfilling the 3-5-condition and after a maximum-duration depending on the employment-record. In the meso-model we have to assume that both effects are uncorrelated because we have no known dependencies between the two effects. This hypothesis, therefore, remains untested. A much better glue needs knowledge on dependencies between the two effects. A micro-model describing both effects could give this information but as we have put before, such an all-incorporating model would become too large and too impractible to work with, unless the computer handles the combination of the models. Then you step into the world of artificial intelligence.

Table 3

Experiments with the Meso-Flow-Model: the Volume of Beneficiaries
(the number of beneficiaries of the wage related benefit under present day legislation equals 100)

	maximum duration wage related benefits -0.5 year	present day legislation	maximum duration wage related benefits +0,5 year	maximum duration wage related benefits +1.0 year
wage related benefit				
0 - 24	30.5	35.2	43.3	48.9
30 - 39	18.1	23.4	27.8	31.3
40 - 44	18.9	21.8	24.2	26.1
50 - 65	18.6	19.6	20.5	21.3
total	86.1	100.0	115.8	127.6
minimum level benefit				
0 - 29	60.2	56.3	49.9	45.8
30 - 34	33.8	29.5	26.0	23.1
40 - 49	37.1	34.6	32.6	31.0
50 - 64	30.5	29.7	29.0	28.3
total	161.6	150.1	137.5	128.2

V. Effects on the Policy-Making-Process

In the sections above, we described the development in modelling of the unemployment insurance. Such a development has externalities which have to be predicted as far as possible. We will mention the following effects: political effects and organizational effects.

5.1. Political Effects

Above we have described the trend towards a fine-tuning policy and its consequences for the policy making process. Additional empirical data have to be obtained and descriptions of the proposed legislation have to be made. A necessary condition for such a description is the availability of computer technology; hardware as well as software. If this condition is fulfilled and all information necessary is available, every question of politicians on specific groups of clients can potentially be answered. This possibility can lead towards additional questions and additional fine tuning of policy-measures as we have seen during the last decade.

An expert system in its most advanced form is potentially a tool for fine tuning. It gives the opportunity to answer questions on effects for specified individuals (interpretation-function) and on effects for groups of individuals on the total population of clients (simulation). This could finally lead to a system in which every client will receive a different benefit, given his or her specific circumstances in order to reach as a target for example a situation in which every client is on the same utility-level after receiving a benefit. This is not only a theoretical situation, but it is also questionable whether such a situation is really found to be desirable (see for example VAN 'T EIND, VAN FULPEN, POMMER, and RUITENBERG, 1986 in which this problem is discussed for the case of subsidized goods and services).

5.2. Organizational Effects

Expert-systems have to be maintained. New facts and (scientific) knowledge have to be incorporated in the knowledge base of the system. This can only be done with the aid of trained employees of the SOCIAL SECURITY DIVISION and insurance institutions. This could create social problems because,for example, employees with a lower vocational training will only use the knowledge base, and their work will possibly be lower graded.

Now the legislation process results in an act (unemployment insurance) and this act, together with the interpretation of an employee of an insurance-organization, results in a decision on the level and duration of the benefit. The beneficiary can appeal against this decision. In the future, however, it could be possible to produce a new expert system instead of natural language legislation. This system reproduces exactly, and without industry- and region-based interpretation, a decision on the level and duration. This reduces the "couleur-locale" of the decision and it is not obvious that this development is what society and politicians really want.

Appendix I: Social Security in the Netherlands

I.1. The System of Social Security in 1987

The following acts of the *Dutch Social Security System* are relevant for this paper:

- *Unemployment Insurance Act* (WW),
- *Disablement Insurance Act* (WAO),
- *Supplementary Benefits Act* (TW),
- *National Assistance Act* (ABW),
- *Act on Income Provision for Older and Partially Disabled Workers* (IOAW).

The *Disablement Insurance Act* grants, in principle, 70 % of the last earned wage. This insurance includes also social risks (risque social). It is an insurance against loss of wages and all employees under 65 are compulsory insured under this scheme. Benefits are paid up to the age of 65. The total benefit can only be received when the individual is not partially disabled. Otherwise the individual can be entitled to an unemployment benefit just as regular unemployed. The *Unemployment Insurance Act* grants during the first period 70 % of last earned wage (wage related allowance) and one has to have worked at least 26 weeks during the year prior to unemployment. The duration of the wage-related period depends on the employment record of the individual as follows:

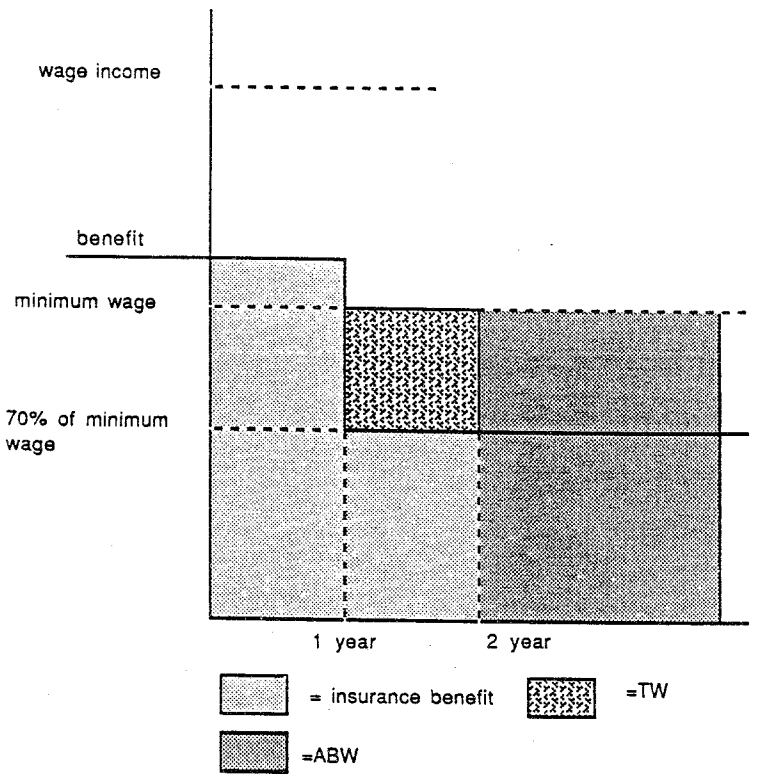
employment-record in years	maximum duration of the benefits in years
0,5 - 4	0,5
5 - 9	0,75
10 - 14	1
15 - 19	1,5
20 - 24	2
25 - 29	2,5
30 - 34	3
35 - 39	4
40 or more	5

Those beneficiaries who are still unemployed after the relevant period are allowed to have one more year of benefit at the level of 70 % of the minimum wage. The maximum duration of the insurance is limited to 0.5 year if the beneficiary worked less than 3 years during the last 5 years (the 3-5-condition).

When a social security-beneficiary receives less than the minimum wage and he or she has a partner or children, the *Supplementary Benefits Act* (TW) grants an additional amount up to the minimum wage level. The marital status of the beneficiaries is not relevant for this supplementary allowance, the TW, however, is income-tested. When passing the maximum duration of the unemployment insurance, the unemployed may receive an ABW or IOAW-allowance. The ABW as well as the IOAW equals the minimum wage level or 70 % of that level just as in the case of the TW, according to the household-situation. The ABW is means-tested; i.e. income-tested as well as tested on property while the IOAW is only income-tested. The benefits of the unemployed is presented in *Figure I*.

Figure I

Wage Related Benefits and Minimum Benefits for Unemployed



The level and duration of an unemployment insurance benefit including the TW thus depends, among others, on the following variables:

- number of labour-weeks during the last half year;
- partnership;
- other household-income;
- employment record during the last five years;
- last earned wage income.

Those variables are judged by the institution which pays the benefits (bedrijfsverenigingen). This judgement includes the interpretation of the particular institutions and the employee involved.

I.2. The Growth of Social Security

In *Table I* we present some data on social security. We compare the situation in 1988 with preceding years.

Table I
Statistical Data on Social Security

beneficiaries (f.t.e. x1000)	1975	1985	1988[a)]
WAO	312	695	729
WW	160	258	229
ABW (unemployment related)	37	392	391
Total benefits (billion[b)] guilders)	**1975**	**1985**	**1988[a)]**
WAO	5.7	17.2	18.4
WW	3.0	7.2	6.1
ABW (unemployment related)	0.4	7.1	6.8
TW	-	-	0.6

a) Estimated.

b) In 1988 a DM and US-dollar equals respectively 1.10 guilders and 2 guilders.

Source: MINISTRY OF SOCIAL AFFAIRS AND EMPLOYMENT, May 1988.

The labour population in the Netherlands equaled in 1987 about 6.0 million persons, including unemployed. About 685.000 individuals are unemployed.

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