This text is a publication of the Working Papers Social Security Series of the Directorate-General Study and Research of the FPS Social Security.

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Evolution Social Protection

Working Paper Social Security

MIMOSIS: MIcrosimulation MOdel for Belgian Social Insurance Systems
Modelling rules for module on welfare adaptation of pensions

July 2007

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Abstract

We suggest, in this note, how welfare adaptations of retirement and survival pensions, minimum amounts of pension and guaranteed income of elderly can be computed. The starting point of this note is the law project 1948/001 that is taken back by the Generation Pact. It makes provision of a structural mechanism of pension welfare adaptations. With the module, discussed in this note, the user should be able to simulate the welfare adaptations that are considered by the government.

In this module, we only take into account possible welfare adaptations for pensions of wage earners and self employed, as the way to adapt civil servants' pensions to the evolution of welfare is done through a different and automatic system called perequation.

The computation rules, discussed in this note, are integrated in the microsimulation model MIMOSIS.[1] The subset of MIMOSIS that covers the welfare adaptation rules, is called the PENSWELF module.

The rules, discussed in this note, and implemented in the PENSWELF module, cover the legislation of the year 2001. In appendix 1 we discuss changes, necessary to simulate changes in the legislation of benefit years until 2005.

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[1] The development of the MIMOSIS model was supported by Federal Science Policy within the framework of the AGORA programme, on the request of the F.P.S. Social Security, who is responsible for the management and the maintenance of the MIMOSIS model. The model is based on administrative data from the Datawarehouse Labour market and Social protection, managed and maintained by the CrossRoads Bank for Social Secruity.

Table contents

Introduction

In order to compute welfare adaptations of pensions we use a number of exogenous variables, obtained from an administrative data source. Next to this we also need to construct a number of endogenous variables. Some elements of the legislation are integrated in the module in a parametric form.

In the remainder of the text we point out which are the exogenous and endogenous variables and the parameters of the PENSWELF module. Names of variables and parameters will appear with capital letters. The names of endogenous variables and parameters start with the string PENSWELF_. Unless indicated otherwise, the default value of an endogenous variable is 0.

Throughout we assume that the model runs on quarterly data. If a variable or parameter name ends with the string _QT this refers to registrations for the quarter that is being processed. A quarterly registration can either be an amount received during the given quarter, or a status that is assumed to apply throughout the quarter. Variables or parameters that contain registrations for preceding quarters are referred to with ending strings _QTMIN1, _QTMIN2, _QTMIN3 … referring respectively to the preceding quarter, two quarters ago and three quarters ago. Variables or parameters that contain registrations for a day, month or year, end with the string _DAY, _MONTH or _ANN respectively. In appendix 2 we provide a list of all variables and parameters used in this note.

The welfare adaptations differ conditional on some characteristics of the pensioner. In section 1 we discuss how these characteristics have been reconstructed. The computation of the welfare adaptations itself is then discussed in section 2.

1   IDENTIFICATION OF VARIABLES NECESSARY TO COMPUTE PENSION BENEFITS ADAPTATED TO WELFARE CHANGES

The welfare adaptations of the schemes that are considered below, depend on several variables:

1. the scheme coverage of the contributions (employee, civil servant, self employed or guaranteed income),
2. the year of retirement,
3. the replacement rate,
4. the type of benefit that is received: national or legal pensions, retirement or survival pension, minimum pension or guaranteed income of elderly,
5. We must also distinguish between percentages or lump-sum adaptations.

In order to identify all these elements, we mainly rely on information from CIMIRe (Compte Individuel de Pension), from the Pension Cadastre and from the National Register.

With the help of the Pension Cadastre data we are able to identify 14 different schemes for each pensioner. Basically we identify a gross amount of benefits paid throughout 2001 for each of these 14 schemes and the starting date of the payments.

In Table 1 we list the 14 schemes that have been identified. Column 3 and 4 of Table 1 contain respectively the names that are used throughout to identify the gross amount per year and the starting date of the payments of each of these benefits.[2] It is important to note that the concepts, listed in Table 1, only cover legal pension rights, generated according to Belgian pension legislation rules (i.e. foreign or supranational pension benefits and extralegal rights are excluded from the analysis).

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[2] In Maréchal, Paszukiewicz, Perelman and Van Camp (2007) we discuss how these different concepts have been reconstructed.

Table 1: Variables from the Pension Cadastre used to simulate welfare adaptations of pension benefits

Scheme number	Label	Variable name used for gross amount of benefit	Variable name used for starting date of payments
(1)	(2)	(3)	(4)
1	retirement pension for wage earners	CADASPEN_WER_ANN	CADASPEN_WERBEGIN_ANN
2	complement to retirement pension for wage earners	CADASPEN_WERC_ANN	CADASPEN_WERCBEGIN_ANN
3	survival pension for wage earners	CADASPEN_WES_ANN	CADASPEN_WESBEGIN_ANN
4	retirement pension and complement for civil servants	CADASPEN_CSR_ANN	CADASPEN_CSRBEGIN_ANN
5	survival pension for civil servants	CADASPEN_CSS_ANN	CADASPEN_CSSBEGIN_ANN
6	retirement pension for self-employed	CADASPEN_SER_ANN	CADASPEN_SERBEGIN_ANN
7	survival pension for self-employed	CADASPEN_SES_ANN	CADASPEN_SESBEGIN_ANN
8	retirement rent as civil servant	CADASPEN_RCS_ANN	CADASPEN_RCSBEGIN_ANN
9	retirement rent as wage earner	CADASPEN_RWER_ANN	CADASPEN_RWERBEGIN_ANN
10	survival rent as wage earner	CADASPEN_RWES_ANN	CADASPEN_RWESBEGIN_ANN
11	unclassified retirement pensions	CADASPEN_NCLR_ANN	CADASPEN_NCLRBEGIN_ANN
12	unclassified survival pensions	CADASPEN_NCLS_ANN	CADASPEN_NCLSBEGIN_ANN
13	guaranteed income for elderly	CADASPEN_IG_ANN	CADASPEN_IGBEGIN_ANN
14	housing allowances	CADASPEN_HWA_ANN	CADASPEN_HWABEGIN_ANN

The welfare adaptations will be applied on monthly values. For this purpose we have to convert the observed annual values to monthly values. To compute these monthly values, we first derive the number of months for which a benefit has been paid, throughout the year. We store the monthly benefits in the matrix PENSWELF_BENBEFOR_MONTH. In the matrix PENSWELF_NUMMONTH_ANN we store the number of months for which a pensioner already receives a pension benefit on January 1st 2002. Each of these matrixes contains 14 columns for each individual in the sample.

Construction rule for PENSWELF_BENBEFOR_MONTH and PENSWELF_NUMMONTH_ANN:

To produce the number of months for which the pension benefit was already paid on January 1st 2002, we use the year and the month on which payments

of the benefit were first executed. This information can be derived for each benefit seperately from the values of the variables listed in column 4 of Table 1. For each indvidual the obtained value is then stored in the column of PENSWELF_NUMMONTH_ANN that corresponds with the row number listed in column 1 of Table 1.

The monthly amount per benefit is then derived by dividing the annual amounts (i.e. the variables listed in column 3 of Table 1) by the number of months for which a benefit was paid in 2001. The number of months for which a benefit was paid in 2001 is equal to the value observed for a given benefit in PENSWELF_NUMMONTH_ANN if this value is less than or equal to 12. It the value is larger, we assume that a benefit for each month and divide the annual benefit by 12. The monthly amount that we obtain is stored in the column of PENSWELF_BENBEFOR_MONTH that corresponds with the row number listed in column 1 of Table 1.

For some of the computations, to be carried out later on, we require an estimate of the pension benefits received by an individual. We reconstruct a quarterly amount of the pension benefits and store this result in the variable PENSWELF_AMOUNTP_QT.

Construction rule for PENSWELF_AMOUNTP_QT:

To compute the quarterly pension amount, we first multiply the values in the 14 columns of PENSWELF_BENBEFOR_MONTH with the minimum of PENSWELF_NUMMONTH_ANN and 12, and divide the result by 4. We then add the quarterly amounts to PENSWELF_AMOUNTP_QT. In making this sum we exclude the guaranteed income for elderly (this implies that we do not take into account values observed in column 13).

The pension benefits that an individual receives, are a fraction of the last obtained income before retirering. This replacement rate depends on the household position of the pensioner. An individual can either be entitled to a household rate or to a single rate. The household rate (75%) applies for married individuals of whom the spouse has no professional activity and no replacement income. To reconstruct this replacement rate, we need to know for each individual the sum of its labour and replacement income. We store this reconstructed income concept in the variable PENSWELF_INDINC_QT.

Construction rule for PENSWELF_INDINC_QT:

In order to construct PENSWELF_INDINC_QT we use a number of income variables that we obtain from other modules that are included in the model. We list these variables and the name of the module that produces these variables as output, in Table 2.

Table 2: Income variables produced by different modules of the model used as input to check the income position of an individual

Variable	Module	Description
CONTRIB_REVPRIV_QT	CONTRIB	Sum of gross labour income, holiday earnings and other supplements, earned as wage earner on the private labour market
CONTRIB_REVPUB_QT	CONTRIB	Sum of gross labour income, holiday earnings and other supplements, earned as wage earner on the public labour market
CONTRIB_INCSELF_QT	CONTRIB	Gross income earned as self employed
PENSWELF_AMOUNTP_QT	PENSWELF	Gross amount of pensions received
SICK_TOTBEN_QT	SICK	Gross amount of sickness and disability benefits estimated before sickness and disability benefits are computed
UNEM_TOTBEN_QT	UNEM	Gross amount of unemployment benefits

We construct PENSWELF_INDINC_QT as the sum of the concepts, listed in Table 2.

Since we also dispose of family tie information, that allows us to indicate whether an individual is married or not, we can reconstruct the replacement rate that applies for each pensioner. We store the reconstructed result in PENSWELF_REPRATE_QT. If the household rate applies we set this variable equal to 75. If not, this variable is set equal to 60.

Construction rule for PENSWELF_REPRATE_QT:

To reconstruct this variable we need to know a) whether the pensioner has a married partner or not and b) the sum of labour and replacement income of this partner.

In order to identify the partner of an individual we make use of the relationship variables: FAMREL_RELATION, FAMREL_FAMTYPE and FAMREL_COUPLE that are provided by the module FAMREL. For this exercise we will only consider legally married partners as those that might entitle the pensioner to a replacement rate of 75%.

If a pensioner (i.e. an indvidual with a value of PENSWELF_AMOUNTP_QT different from 0), is married, we set the value PENSWELF_REPRATE_QT equal to 75, if the partner of this individual has no labour or replacement income (i.e. the value of PENSWELF_INDINC_QT is equal to 0 for this partner). If both partners are pensioners, we only set the value of PENSWELF_REPRATE_QT equal to 75 for the head of the family (in principle this is the man). We set the value of the other then equel to 60.

For later simulation purposes we also identify whether the pensioner benefits from minimum pensions or not. Some people may be granted a minimum amount of pensions if their career is incomplete but covers at least 2/3 of a full

time career in the same coverage scheme. The granted minimum benefit is then computed as the product of a lump sum monthly benefit multiplied with the career fraction, i.e. the number of years that generate a benefit divided by the years of a full career. In Table 3 we list the lump sum monthly benefits that were applied from the 1st of June 2001 on to set the minimum pension benefits.

Table 3: Minimum pension amounts per month from the 1st June 2001.[3]

	Wage earner scheme	Self-employed scheme
Retirement pension at household rate	963,54	768,10
Retirement pension at single rate	771,07	576,08
Survival pension	758,50	576,08

We identify whether a pensioner benefits from a minimum pension in the wage earner scheme, the self employed scheme or in the civil servant scheme. We store identifications of this in the variables PENSWELF_WEMIPENS_ANN, PENSWELF_SEMIPENS_ANN and PENSWELF_CSMIPENS_ANN respectively. If the pensioner benefits from one of these minimum pensions, we set the respective variable equal to 1. Otherwise it is equal to 0.

Construction rule for PENSWELF_WEMIPENS_ANN, PENSWELF_SEMIPENS_ANN and PENSWELF_CSMIPENS_ANN:

We observe the number of years, performed as wage earner, in the variable CIMIRE_NUMCYEAR. The number of years for each wage earner is assumed to be 45. If the value of CIMIRE_NUMCYEAR is smaller than 45 we divide the value observed in CIMIRE_NUMCYEAR by 45 and multiply this with the value observed in the column wage earner of Table 3. We select a value from Table 3 conditional on the replacement rate of the pensioner, i.e. the value of PENSWELF_REPRATE_QT.

The theoretical value for the minimum pension that we thus obtain is compared with the real monthly benefit that the individual receives as a wage earner, i.e. the value stored in column 1 of PENSWELF_BENBEFOR_MONTH. If the real benefit only deviates for 1% in absolute amounts with the theoretical one, we assume that the individual benefits from a minimum pension and set PENSWELF_WEMIPENS_ANN equal to 1.

Since we currently lack information on the career of civil servants and self employed, we do not have sufficient information to identify these variables. Hence, we set PENSWELF_SEMIPENS_ANN and PENSWELF_CSMIPENS_ANN equal to 0 for all individuals.

The values, listed in Table 3, are integrated in the model in the form of the parameter PENSWELF_MINPENS_MONTH. This parameter is a matrix that consists of 3 lines and 2 columns.

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[3] See FOD Sociale Zekerheid (2002), p. 269.

2 COMPUTATION OF PENSION BENEFITS ADAPTED TO WELFARE CHANGES

The user of the PENSWELF module has the option to either change the pension benefit with an absolute amount or in percentage terms. To distinguish both options, he is offered the parameter PENSWELF_TYPESIM. If this variable is set equal to 1 the pension amounts will be adapted with an absolute figure, if it is set equal to 2 pension benefits will be adapted in percentage terms.

If the option to change the pensions with absolute amounts is chosen, the user should complete at the same time the parameter PENSWELF_ABSCHANG_MONTH. This parameter is a matrix consisting of 14 lines and 4 columns. Over the lines, this parameter varies with pension scheme (i.e. wage earner scheme, self employed scheme, guaranteed income of elderly and minimum pension) and the type of pension (i.e. retirement pension with houehold rate, retirement pension with single rate and survival pension). Over the columns this parameter differs with the number of years the pensioner is already pensioned. The values of the columns are set by the parameter PENSWELF_TIMESPAN, which is a vector with 3 lines and 1 colmun, contain the time already retired expressed in months. The amounts that are entered through the parameter PENSWELF_ABSCHANG_MONTH, should be expressed in Euros per month.

Table 4: Structure of the parameter PENSWELF_ABSCHANG_MONTH: to be completed in case of adaptations of pension benefits with absolute amounts

	Pension scheme	Type of pension	Years of pension			
			0 to 4	5 to 9	10 to 14	15 to 60
1	Pensions in the wage earner scheme other than minimum pensions	Retirement pension, household rate	0	0	0	0
2		Retirement pension, single rate	0	0	0	0
3		Survival pension	0	0	0	0
4	Pensions in the self employed scheme other than minimum pensions	Retirement pension, household rate	0	0	0	0
5		Retirement pension, single rate	0	0	0	0
6		Survival pension	0	0	0	0
7	Guaranteed income of elderly	Retirement pension, household rate	0	0	0	0
8		Retirement pension, single rate	0	0	0	0
9	Only minimum pensions in the wage earner scheme	Retirement pension, household rate	0	0	0	0
10		Retirement pension, single rate	0	0	0	0
11		Survival pension	0	0	0	0
12	Only minimum pensions in the self employed scheme	Retirement pension, household rate	0	0	0	0
13		Retirement pension, single rate	0	0	0	0
14		Survival pension	0	0	0	0

By exploiting the values, entered through the parameter PENSWELF_ABSCHANG_MONTH, we can create a matrix with adapted monthly benefits. We will store the result in the matrix PENSWELF_BENAFTER_MONTH.

Construction rule for PENSWELF_BENAFTER_MONTH:

If PENSWELF_TYPESIM is set equal to 1, the values of PENSWELF_BENAFTER_MONTH are created by adding the values observed in the parameter PENSWELF_ABSCHANG_MONTH to the benefits coming from the Pensioenkadaster, i.e. those observed in PENSWELF_BENBEFOR_MONTH. The addition is executed conditional on the values of some of the variables, previously reconstructed.

Values observed in row 1 and 2 or in row 9 and 10 of PENSWELF_ABSCHANG_MONTH are added to the value observed in column 1 of PENSWELF_BENBEFOR_MONTH (i.e. the wage earner retirement benefits).

Values observed in row 3 or 11 of PENSWELF_ABSCHANG_MONTH are added to the value observed in column 3 of PENSWELF_BENBEFOR_MONTH (i.e. the wage earner survival benefits).

Values observed in row 4, and 5 or in row 12 and 13 of PENSWELF_ABSCHANG_MONTH are added to the value observed in column 6 of PENSWELF_BENBEFOR_MONTH (i.e. the self employed retirement benefits).

Values observed in row 6 or 14 of PENSWELF_ABSCHANG_MONTH are added to the value observed in column 7 of PENSWELF_BENBEFOR_MONTH (i.e. the self employed survival benefits).

Values observed in row 7 or 8 of PENSWELF_ABSCHANG_MONTH are added to the value observed in column 13 of PENSWELF_BENBEFOR_MONTH (i.e. the guaranteed income of elderly).

If one opts to change the minimum pensions, only the benefits of those having a value PENSWELF_WEMIPENS_ANN or PENSWELF_SEMIPENS_ANN equal to 1, are adapted. Once decided to which pension scheme, the extra amounts should be added, the appropriate value is selected from the parameter PENSWELF_ABSCHANG_MONTH conditional on the replacement rate if necessary (i.e. the value of PENSWELF_REPRATE_QT) and conditional on the number years the pensioner benefits from the pension benefit. We derive the latter by dividing the number of months the pensioner recieves the benefit (i.e. the value observed in PENSWELF_NUMMONTH_ANN) by 12.

If the user chooses to change the observed benefits in percentage terms, he should complete at the same time the parameter PENSWELF_PRCCHANG_MONTH. This parameter is a matrix consisting of 14 lines and 4 columns which has the same structure as PENSWELF_ABSCHANG_MONTH. Values entered in the celss of this matrix, should be entered in percentage terms.

Construction rule for PENSWELF_BENAFTER_MONTH (continued):

If PENSWELF_TYPESIM is set equal to 2, the values of PENSWELF_BENAFTER_MONTH are created by exploiting the percentages observed in the parameter PENSWELF_PRCCHANG_MONTH. The new amount, stored in PENSWELF_BENAFTER_MONTH, is now computed as a) 1 plus the value observed in the parameter PENSWELF_PRCCHANG_MONTH divided by 100 times b) the value observed in a column of PENSWELF_BENBEFOR_MONTH.

The selection of the appropriate is similar to the procedure explained for the computation of absolute changes, except that in case of percentage changes for wage earner retirement pensions, both the real retirement pension (i.e. column 1 of PENSWELF_BENBEFOR_MONTH) and the complement to the retirement pension (i.e. column 2 of PENSWELF_BENBEFOR_MONTH) are adapted.

Apart from simulations that exploit the structure of the parameters PENSWELF_ABSCHANG_MONTH or PENSWELF_PRCCHANG_MONTH to determine the pension benefit after the reform, the user can also run a number of fixed scenario's. To do so, the parameter PENSWELF_WELFADAP should be used. In Table 5 we list the different values this variable can take and which scenario is launched with it.

Table 5: Values of the parameters PENSWELF_WELFADAP and the simulation scenario that is launched with it.

Value of PENSWELF_WELFADAP	Simulated scenario
0	Simulation with the values of the parameters PENSWELF_ABSCHANG_MONTH or PENSWELF_PRCCHANG_MONTH
1	Increase the monthly retirement pensions of employees and self employed who have a pension below the threshold of a minimum pension with 5.18% and those above this threshold with 40 or 50 euros (conditional on their replacement rate).
2	Increase the sum of the monthly retirement and survival pensions of employees and self employed who have a pension below the threshold of a minimum pension with 5.18% and those above this threshold with 40 or 50 euros (conditional on their replacement rate). Here, the retirement pension and the survival pension of a wage earner are considered as one pension and the retirement pension and the survival pension of a self employed are considered as one pension.
3	Increase the sum of the monthly retirement and survival pensions of employees and self employed who have a pension below the threshold of a minimum pension with 5.18% and those above this threshold with 40 or 50 euros (conditional on their replacement rate). Here, the retirement pension and the survival pension of a wage earner and the retirement pension and the survival pension of a self employed are all considered as one pension.
4	Increase the monthly retirement pension of self employed who have a pension below the threshold of a minimum pension with 3%.
5	Increase the monthly retirement pension of self employed who have a pension below the threshold of a minimum pension with 16%.
6	Increase the monthly retirement pension of self employed who have a pension below the threshold of a minimum pension with 16% and those above the minimum pension with 3%.

3 COMPUTATION OF PENSION BENEFITS NOT ADAPTED TO WELFARE CHANGES

Holiday earnings are granted to wage earners and civil servants and generally paid as a supplement to retirement and survival pension benefits in the month of May of the year. These holiday earnings were not included in one of the 14 benefit variables, listed in Table 1, and thus should still be constructed as an extra, if we want to have an estimate of the total benefit of a pensioner.[4]

Wage earners receive a lump sum amount that differs with the replacement rate, applied to compute the pension. We list the holiday earnings that applied in 2001, in Table 6.

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[4] Some other benefits such as a) housing allowances, b) the pension allowances paid to self employed and c) special allowances paid to self employed were included in the definition of one of the 14 benefit variables listed in Table 1, and thus should not be reconstructed.

Table 6: Holiday earnings for wage earners (annual amount in € paid in 2001).[5]

	Household rate	Single rate
Holiday earnings for wage earners	594.94	475.94

Civil servants also receive a lump sum amount that differs with the replacement rate, applied to compute the pension if their gross penion in May 2001 does not exceed the level of € 1.603,38. If the civil servant benefits from a minimum pension, he is granted a larger amount of holiday earnings than if his pension benefit exceeds the minimum level. We list the holiday earnings that applied in 2001, in Table 7.

Table 7: Holiday earnings for civil servants (annual amount in € paid in 2001).[6]

	Household rate	Single rate
Holiday earnings for civil servants	268,34	201,26
Complementary holiday earnings for civil servants	364,83	304,27

If the holiday earnings of either a wage earner or a civil servant exceeds his normal monthly pension benefit, his holiday earnings are limited to the amount of the normal monthly pension benefit.

We will reconstruct these holiday earnings and store the result in the variable PENSWELF_BENHOLID_ANN.

Construction rule for PENSWELF_BENHOLID_ANN:

To check whether a pensioner benefits from a pension as wage earner or civil servant, we check the height of the benefits observed before welfare adaptations are applied. To do so, we take the sum of the amounts observed in columns 1, 2 and 3 of PENSWELF_BENBEFOR_MONTH and of columns 4 and 5. If the first sum is different from 0 and the second not, we consider the indvidual as a wage earner. If the reverse is true, it is considered as a civil servant. And if both sums are different from 0, we select the status that correponds with the largest amount of monthly benefits.

In case the pensioner is a wage earner, we select the basic holiday earning from Table 6, conditional on the replacement rate of the pensioner (i.e. the value of PENSWELF_REPRATE_QT). If the pensioner is a civil servant, we select the basic holiday earning from Table 7, conditional on the replacement rate of the pensioner (i.e. the value of PENSWELF_REPRATE_QT) and an identification of the fact that he receives a minimum pension or not (i.e. the value of PENSWELF_CSMIPENS_ANN).

If the selected value is larger than the sum of the monthly pension benefits that the individual receives, we limit the holiday earnings to the amount that

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[5] See FOD Sociale Zekerheid (2002), p. 271.
[6] See FOD Sociale Zekerheid (2002), p. 310.

the individual receives per month. It is the latter, limited, value that is stored in the variable PENSWELF_BENHOLID_ANN.

The values in Table 6 and Table 7 are integrated in the module in the form of the parameters PENSWELF_WEHOLID_ANN and PENSWELF_CSHOLID_ANN. These parameters consis of 1 and 2 lines respectively and 2 columns.

4 CONSTRUCTION OF PENSION BENEFITS EXCHANGED TO OTHER MODULES

Throughout the preceding sections we reconstructed several benefit variables. Some of the other modules of MIMOSIS require aggregates of these benefit variables, produced by the PENSWELF module. In this section we discuss the variables constructed to exchange to the other modules.

The module on contributions, i.e. CONTRIB, requires both an aggregate of the retirement pensions and of the survival pensions per quarter as input. We reconstruct these concepts and store the result in the variables PENSWELF_RETPENS_QT and PENSWELF_SURPENS_QT respectively.

Construction rule for PENSWELF_RETPENS_QT and PENSWELF_SURPENS_QT:

To compute these variables, we start with the values observed in PENSWELF_BENAFTER_MONTH. We multiply the value in each column by either the value observed in PENSWELF_NUMMONTH_ANN (if this value is 12 or smaller) or by 12. The result thus obtained for each of the 14 columns, is then divided by 4.

We then add the results of column 1, 2, 4, 6, 8, 9 and 11 to PENSWELF_RETPENS_QT. The values of column 3, 5, 7, 10 and 12 are added to PENSWELF_SURPENS_QT.

The housing allowances, i.e. the value observed in column 14 are added to either PENSWELF_RETPENS_QT or to PENSWELF_SURPENS_QT, depending on which of the two is the largest.

We also add the holiday earnings, i.e. the value observed in PENSWELF_BENHOLID_ANN, to either one of the two variables. To convert the annual holiday earnings to quarterly values, we simply divide the value in PENSWELF_BENHOLID_ANN by 4.

The modules on unemployment benefits, sickness and disability benefits and family allowances, i.e. UNEM, SICK and FAMAL, require an estimate of the total amount of the benefits, granted because of legal pension rights, generated according to Belgian pension legislation rules. We reconstruct this variable and store the result in the variable PENSWELF_AMOUNTP_QT.

Construction rule for PENSWELF_AMOUNTP_QT:

We construct the variable PENSWELF_AMOUNTP_QT as the sum of the reconstructed retirement and survival pensions, i.e. the values of PENSWELF_RETPENS_QT and PENSWELF_SURPENS_QT.

The FAMAL module also requires the main coverage scheme of the pension benefits as input. We use the monthly pension benefits to derive the main coverage scheme and store the result in the variable PENSWELF_BENSCHEM_QT. This variable can take four values, apart from the default value 0, i.e. 1) benefits are paid in the wage earner scheme, 2) benefits are paid in the civil servant scheme, 3) benefits are paid in the self employed scheme and 4) benefits could not be classified.

Construction rule for PENSWELF_BENSCHEM_QT:

To identify the main contribution scheme of the pensioner we first make the sum of the benefits, observed before welfare adaptations are applied, per contribution scheme. We take the sum of the amounts observed in columns 1, 2 and 3 of PENSWELF_BENBEFOR_MONTH times the number of months each benefit has been paid in 2001 and store this result in SUM1 (i.e. wage earner benefits). The similar sum of the elements in columns 4 and 5 will be stored in SUM2 (i.e. civil servant benefits), that of columns 6 and 7 in SUM3 (i.e. self employed) and that of columns 11 and 12 in SUM4 (i.e. could not be classified).

The number of months a benefit was paid throughout 2001 is either equal to the value of PENSWELF_NUMMONTH_ANN (i.e. if it is 12 or smaller) or 12 if PENSWELF_NUMMONTH_ANN is larger than 12.

The value of PENSWELF_BENSCHEM_QT is the one of the scheme that generates the largest amount of benefits (i.e. the number with which the SUM variable of the largest value out of the 4 possible values ends).

5 REFERENCES

[1] FOD Sociale Zekerheid (2002), *Beknopt overzicht van de sociale zekerheid in België*, Brussel: Federaal Ministerie van Sociale Zaken, Volksgezondheid en Leefmilieu, Bestuur van de Informatie en de Studiën.

[2] Maréchal, Paszukiewicz, Perelman and Van Camp (2007), Creation of the database used in the welfare adaptations module.

APPENDIX 1: CHANGES IN THE LEGISLATION ON WELFARE ADAPTATIONS FOR PENSIONS SINCE THE YEAR 2001

5.1 GENERATION PACT

The Generation Pact takes back the law project 1948/001 and sets up a mechanism to adapt all social allowances to welfare evolution. The Belgian government must make a decision every two years about the amount that is allowed to social allowances welfare increase. This decision must be made for the first time in 2006. This new system is limited to self-employed and wage earner schemes only.

5.2 MINIMUM PENSION

From the first April 2003, it is possible to add the years done in the wage earner and self-employed schemes in order to increase the number of years in the calculation for the minimum pension. When it is done, the minimum pension granted is the self-employed one.

5.3 THE WOMEN'S AGE RETIREMENT

From July 1997, there is a transition period for the women's retirement age. After this transition period, the retirement age for women and for men will be the same, 65 years old. This transition period is detailed in Table 1.

Table 1: The transition period for women's retirement age

The starting pension date	Women's retirement age
Before July 1st 1997	60
July 1st 1997 – December 31st 1999	61
January 1st 2000 – December 31st 2002	62
January 1st 2003 – December 31st 2005	63
January 1st 2006 – December 31st 2008	64
From January 1st 2009	65

APPENDIX 2: CLASSIFICATION OF VARIABLES AND PARAMETERS

Throughout the main text we mentioned the names of variables and parameters that are used for the computation of the welfare adaptations with the PENSWELF module. Within the set of variables one can further distinguish endogenous from exogenous variables. Endogenous variables are variables that are constructed within the PENSWELF module itself. Exogenous variables are variables that either come from a source outside the whole model or from another module and that are used as input of the PENSWELF and therefore remain fixed throughout the PENSWELF module. Parameters are those elements of the module that will be offered to the user of the microsimulation model as something that can be manipulated.

In what follows we provide three tables with the exogenous and endogenous variables and the parameters of the PENSWELF module respectively. Each table consists of two columns that contain the following elements:

1. the name of the variable;
2. a label for this variable in English.

EXOGENOUS VARIABLES

Name	Label
From datawarehouse	
NARGENIS	
NAREGNIS_RELATION	Link between the individual and the head of the household on 1 January 2002
NAREGNIS_SEX	Sex of the individual on 1 January 2002
NAREGNIS_HH_ID	Anonymised identification number of the household to which the individual belongs
NAREGNIS_DATBIRTH	Birth date of the individual in year and month
CADASPEN	
CADASPEN_WER_ANN	Gross amount of retirement pension of wage earner
CADASPEN_WERC_ANN	Gross amount of complement to retirement pension of wage earner
CADASPEN_WES_ANN	Gross amount of survival pension of wage earner
CADASPEN_CSR_ANN	Gross amount of retirement pension and complement of civil servant
CADASPEN_CSS_ANN	Gross amount of survival pension of civil servant
CADASPEN_SER_ANN	Gross amount of retirement pension of self-employed
CADASPEN_SES_ANN	Gross amount of survival pension of self-employed
CADASPEN_RCS_ANN	Gross amount of retirement rent as civil servant
CADASPEN_RWER_ANN	Gross amount of retirement rent as wage earner
CADASPEN_RWES_ANN	Gross amount of survival rent as wage earner
CADASPEN_NCLR_ANN	Gross amount of unclassified retirement pensions
CADASPEN_NCLS_ANN	Gross amount of unclassified survival pensions
CADASPEN_IG_ANN	Gross amount of guaranteed income for elderly
CADASPEN_HWA_ANN	Gross amount of house warming allowances
CADASPEN_WERBEGIN_ANN	Starting date of payments for gross amount of retirement pension of wage earner
CADASPEN_WERCBEGIN_ANN	Starting date of payments for complement to retirement pension of wage earner
CADASPEN_WESBEGIN_ANN	Starting date of payments for survival pension of wage earner
CADASPEN_CSRBEGIN_ANN	Starting date of payments for retirement pension and complement of civil servant
CADASPEN_CSSBEGIN_ANN	Starting date of payments for survival pension of civil servant
CADASPEN_SERBEGIN_ANN	Starting date of payments for retirement pension of self-employed
CADASPEN_SESBEGIN_ANN	Starting date of payments for survival pension of self-employed
CADASPEN_RCSBEGIN_ANN	Starting date of payments for retirement rent as civil servant
CADASPEN_RWERBEGIN_ANN	Starting date of payments for retirement rent as wage earner
CADASPEN_RWESBEGIN_ANN	Starting date of payments for survival rent as wage earner
CADASPEN_NCLRBEGIN_ANN	Starting date of payments for unclassified retirement pensions
CADASPEN_NCLSBEGIN_ANN	Starting date of payments for unclassified survival pensions

CADASPEN_IGBEGIN_ANN	Starting date of payments for guaranteed income for elderly
CADASPEN_HWABEGIN_ANN	Starting date of payments for house warming allowances
CIMIRE	
CIMIRE_NUMCYEAR	Number of career years performed by the individual
From other modules	
FAMREL_FAMILY	Unique identifier identifying the family to which the individual belongs
FAMREL_RELATION	Relation of the individual with respect to the head of the family
FAMREL_FAMTYPE	Type of family to which the individual belongs
FAMREL_COUPLE	Type of couple to which the individual belongs
CONTRIB_REVPRIV_QT	Sum of gross labour income, holiday earnings and other supplements, earned as wage earner on the private labour market
CONTRIB_REVPUB_QT	Sum of gross labour income, holiday earnings and other supplements, earned as wage earner on the public labour market
CONTRIB_INCSELF_QT	Labour income, earned as self employed
SICK_TOTBEN_QT	Sum of benefits for sickness, disability, industrial accidents and occupational diseases
UNEM_TOTBEN_QT	Gross amount of unemployment benefits

ENDOGENOUS VARIABLES

Name	Label
PENSWELF_NUMMONTH_ANN	Number of months for which the pensioner already receives a pension benefit on January 1st 2002
PENSWELF_AMOUNTP_QT	Total sum of pension benefits received per quarter (sum of all retirement and survival benefits, but no guaranteed pension benefits)
PENSWELF_INDINC_QT	Total sum of labour market and replacement income received by an individual
PENSWELF_REPRATE_QT	Replacement rate applied to compute pension benefit
PENSWELF_WEMIPENS_ANN	Wage earner benefits from a minimum pension (no=0, yes=1)
PENSWELF_SEMIPENS_ANN	Self employed benefits from a minimum pension (no=0, yes=1)
PENSWELF_CSMIPENS_ANN	Civil servant benefits from a minimum pension (no=0, yes=1)
PENSWELF_BENBEFOR_MONTH	Monthly pension benefit paid before welfare adaptation in benefit scheme 1 to 14
PENSWELF_BENAFTER_MONTH	Monthly pension benefit paid after welfare adaptation in benefit scheme 1 to 14
PENSWELF_BENHOLID_ANN	Holiday earnings paid to pensions (annual value)
PENSWELF_RETPENS_QT	Quarterly amount of retirement pensions
PENSWELF_SURPENS_QT	Quarterly amount of survival pensions
PENSWELF_BENSCHEM_QT	Contribution scheme that generates the largest amount of pension benefits

PARAMETERS

Name	Label
PENSWELF_MINPENS_MONTH	Minimum pension amounts per month from the 1st June 2001
PENSWELF_TYPESIM	Type of welfare change to be applied on pension benefits (change in absolute amounts = 1, change in percentages = 2)
PENSWELF_ABSCHANG_MONTH	Absolute amount with which pension benefits are to be adapted
PENSWELF_PRCCHANG_MONTH	Percentages with which pension benefits are to be adapted
PENSWELF_WEHOLID_ANN	Holiday earnings paid to pensioners with wage earner benefits
PENSWELF_CSHOLID_ANN	Holiday earnings paid to pensioners with civil servant benefits
PENSWELF_TIMESPAN	Time intervals expressed in months for welfare adaptations
PENSWELF_WELFADAP	Parameter used to select the appropriate welfare adaptation