**The MOSES Technical Specification Code – Integrating the 1976 and 1989 versions**

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In this document the Eliasson, Heiman & Olavi (1976) technical pseudocode that prepares the Eliasson (1976) model design for programming in APL has been augmented to include the new modules of Bergholm, Eliasson, Hartler & Olavi (1989). Some early inconsistencies have been removed. The difference with the 1976 version is that the tax and income transfer system of Eliasson (1980) has been added together with the full eleven sector input output system of Ahlström (1978), that gives firms individual input coefficients, and together with the banking system of Eliasson (1976) entered into the code. Neither the exogenous entry module of Eliasson (1978:52ff) nor that of Hansen (1986) have been made explicit in this version. Endogenous exit is there as specified already in Eliasson 1976. With this the MOSES model had been made micro to macro and stock flow consistent and prepared for the full-scale data base of 1982, as documented in Albrecht et al 1992. This document shows a standard output menu and a complete list of variables.

MOSES is programmed in APL In this publication we do not include a listing of the program but rather a pseudocode specification which is a more English-like syntax of the APL program. Both the 1976 and the 1989 pseudocodes were designed for programming in APL, and even though this upgraded version can in principle be programmed in both APL and C++, or most other types of programming languages (Lindstenz, 2023), an APL bias still lingers on from 1976.

**A modular design**

The MOSES model has a modular design. Simulations are forwarded in time by quarter in a straightforward fashion, which means a sequential recursive logic. Unless otherwise indicated by branching instructions, etc the equations are executed one by one. For one year the quarterly blocks 3-9 are repeated four times.

Figures A, B and C explain the modular and sequential logic of MOSES market dynamics. The block diagrams can be regarded as graphs that are executed using the depth first search algorithm. Functions are executed recursively from top to bottom and from left to right. For example, LUUPDATE is called from within PRODPLAN before PRODFRONT. After INVFIN is executed, control returns to QUARTER, which repeats another quarter if there are quarters left within that year. Likewise, after YEARLY UPDATE is executed, control is returned to YEAR, which repeats a simulation year if specified by the user through the model parameters. Note that LABOUR MARKET and DOMESTIC MARKET are described in further detail in figures B and C.

Since MOSES is a micro based model, the execution of one equation often means several assignments, for firms, for markets, household groups etc. We do not use an indexing system in the pseudocode. In general, it will be clear from the context if equations (and variables and parameters) refer to global entities or to firms, markets etc. This information can also be found in the variable listing at the end.

**MOSES Modules Figure 7A**

A diagram of a company

Description automatically generated

**MOSES Modules Figure 7B**

**Labour Market**

A diagram of a company's work flow

Description automatically generated

**MOSES Modules Figure 7C**

**Domestic Market**

A diagram of a company structure

Description automatically generated

0 **Yearly Initialization**

(YEARLY INIT)

At the beginning of each year, the following firm related variables are set to zero:

CUMQ, CUMM, CUMSU, CUMS, CUMWS, CUML, CUMINV, CUMVA, CUMSNET

They are all updated each quarter in the block 9.2 “Quarterly Cumulation”.

The following government-related variables are set to zero:

CUMWTAX, CUMITAX, CUMVATAX, CUMCTAX, CUMWSG, CUMLG, CUMINVG, CUMPURCHG, CUMTRANS, CUMSUBS, CUMMPRINT, CUMINTG

Finally, the following variables are set to zero:

CUMGNPCUR, CUMGNPFIX, CUMEXPORT, CUMIMPORT

1 **Yearly Expectations**

(YEARLY EXP)

Exponential smoothing is used as a special case of weighted time averages in chapter II. The smoothing factors SMP, SMW, SMS, the constants E1, E2 and the “extroversion” coefficient R do not vary between firms. DP, DW, DS were computed last year in block 14 “Yearly update”.

1.1 Prices

1.1.1

1.1.2

1.1.3

1.1.4

1.1.5

1.1.6

1.2 Wages

1.2.1

1.2.2

1.2.3

1.2.4

1.2.5

1.2.6

1.3 Sales

1.3.1

1.3.2

1.3.3

1.3.4

1.3.5

1.3.6

2 **Yearly Targeting**

(YEARLY TARG)

The targeting function is a special case of the smoothing device in block 1, with R = E1 = E2 = 0. The feed-back value of margin M is computed in block 14 “Yearly update”. The fraction EPS increases target pressure (if it is not zero).

2.1

2.2

We will also make experiments with the following formula, where TARGXM is exogenous or e.g. the actual profit margin for a market leader:

2.3

3.1 **Quarterly Expectations**

(QUARTERLY EXP)

Long-term expectations are transformed to a quarterly basis. In all quarters except the first one, a trade-off takes place with respect to immediate experience. Prices that firms expect to pay for input materials are computed.

3.1.1

3.1.2 (not in the first quarter each year)

3.1.3

3.1.4 Expected purchasing price for input materials, from explicit and external sectors:

3.2 Quarterly Targeting

(QUARTERLY TARG)

3.2.1

4 **Production System and Production Planning**

(PRODPLAN)

4.LU Updating of Unemployment

(LUUPDATE)

Retirements are computed, and new entries to the labour force are added to the pool of unemployed.

4.LU.1

4.LU.2

4.LU.3

4.LU.4

4.LU.5

4.0 Production Possibility Frontier

In block 4, the following function describes the relationship between labour input and maximum production for a firm under normal profitability conditions:

4.0.1

The inverse of this function will also be used:

4.0.2

4.1 Determining Change in Production Frontier

(PRODFRONT)

Productivity of modern equipment is updated. Depreciation is accounted for. A fraction of total investment (LOSS) does not influence production capacity directly but is directed to the “residual slack”, and can be used in future expansions only if current slack is low. Productivity must be updated since old and new equipment differ in quality.

4.1.1

(QDMTEC is entered exogenously)

4.1.2

4.1.3

(QINV and INVEFF from block 10, Investment–Financing)

4.1.4

(The slack RES cannot exceed RESMAX)

4.1.5

4.1.6

4.1.7

4.1.8

4.2 Initial Quarterly Production Plan

(INITPRODPLAN)

This initial plan is based on the sales forecast, plus the desire to keep the stock at its “optimal” level.

4.2.1

4.2.2

4.3 Search for Target Satisfaction

(TARGET SEARCH)

This block describes how a firm varies its combination of labour input and production level to satisfy its profit margin requirement (QTARGM). When the target is reached, search is terminated; this means that each section withing 4.3 is entered only if the firm has not yet found a satisfactory plan.

The diagrams and search paths on the next page explain how this search process has been modelled. Note that search will probably terminate within one of the paths, and not at a corner. Two cases can be distinguished, depending on whether the initial plan implies recruitment or not.

Two devices called “SAT” and “SOLVE” are referred to throughout the block; they are described in 4.3.12 and 4.3.14.

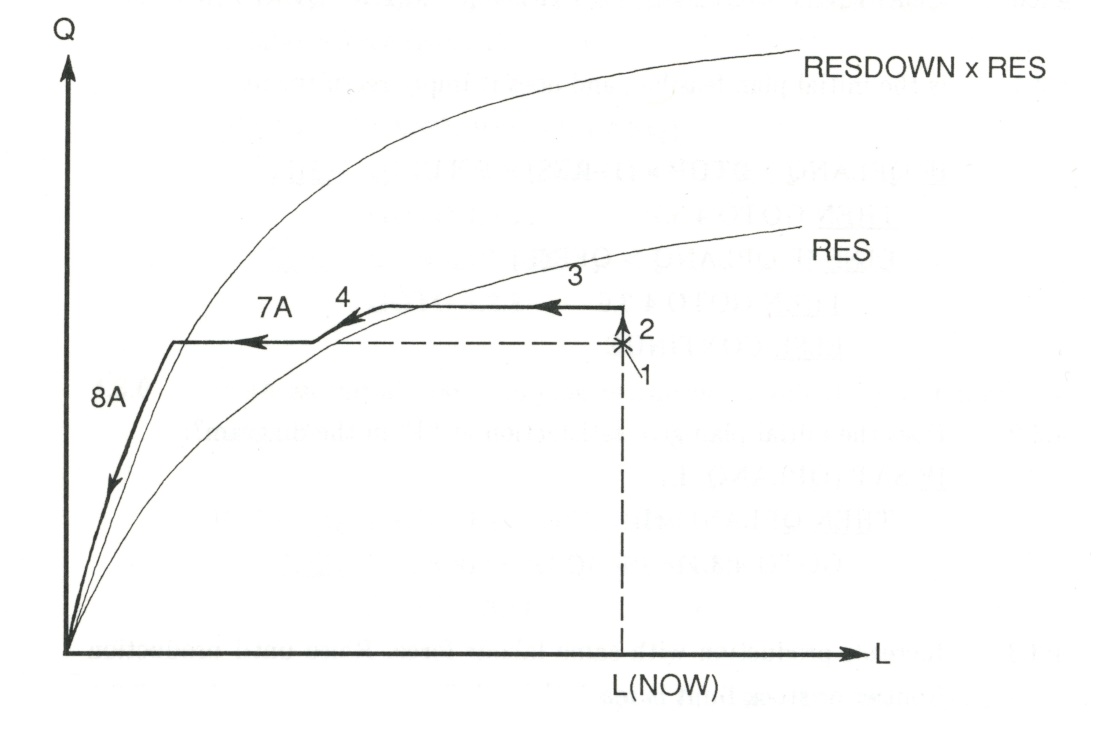
The specification in 4.3 holds for each firm, one at a time.

The name QEXPPNET will be used to denote a “net” sales price:

**Figure 7A. Search for profit target satisfaction**

* Initial plan below QFR(L) doesn’t satisfy profit targets, even if production can be increased by putting employed labor to work (reducing labor hoarding going

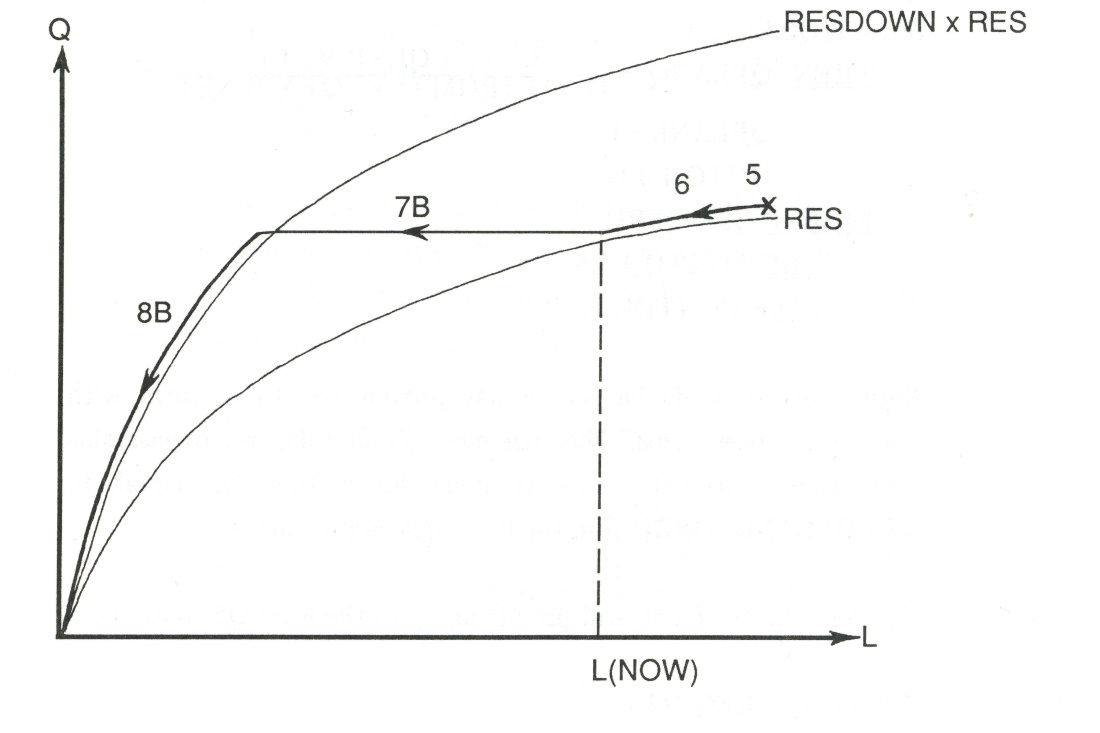
from 1 to 2). Reducing employment is tried, going left and down until profit satisfaction, or perhaps exit down along 8A



Search path, case A: QPLANQ < QFR(L)

**Figure 7B. Search for profit target satisfaction**

* Initial plan (5) needs recruitment, but profit target satisfaction is not achievable without reducing workforce, perhaps even exit (down along 8B)



Search path, case B: QPLANQ > QFR(L)

4.3.0

( is a matrix multiplication)

4.3.1 Is the initial plan feasible, and does it imply recruitment?

IF

THEN GOTO 4.3.7

ELSE IF

THEN GOTO 4.3.6

ELSE CONTINUE

4.3.2 Does the initial plan give satisfaction at “1” in the diagram?:

IF

THEN

GOTO 4.3.11

4.3.3 Increase production with same labour force. Raise until production frontier or stock limit is reached (path 2).

IF

THEN

GOTO 4.3.11

ELSE IF

THEN GOTO 4.3.5

ELSE CONTINUE

Note: This step of the search has proven not to conform with practice in most firms. Thus, in most simulations we bypass this step. Computationally this is done by setting Q2 equal to in the first equation in this step.

4.3.4 Cut down labour force, still producing up to the level Q2 (path 3).

IF

THEN

GOTO 4.3.11

4.3.5 Reduce production down to QPLANQ, with corresponding decrease in labour force (path 4).

IF

THEN

GOTO 4.3.11

ELSE

GOTO 4.3.8

4.3.6 With an initial plan implying recruitment, will the profit target be reached?

IF

THEN

GOTO 4.3.11

4.3.7 First step in search when initial plan implies recruitment (path 6).

IF

THEN

GOTO 4.3.11

ELSE

4.3.8 Keep production at the level Q7 (as it resulted from 4.3.5 or 4.3.7) but reduce the slack RES and thereby the labour force. RESDOWN is a model parameter (path 7), telling how much slack can be reduced during a single quarter.

IF

THEN

GOTO 4.3.11

ELSE

4.3.9 With the new, lower, slack from 4.3.8, try to reach target by reducing production and labour force (path 8).

IF

THEN

GOTO 4.3.11

4.3.10 No plan could be found that satisfies profit target. The firm is eliminated from the model, and the labour force is added to the pool of unemployed.

NULLIFY this firm

4.3.11 QPLANQ and QPLANL have now been decided. The AMAN vector, describing the 2-quarter lag of firings, is updated. (AMAN1 can be fired this quarter).

4.3.12 “SAT”: This device is used to find out if a certain combination Q/L of planned production and labour force will satisfy profit targets.

IF

THEN

ELSE (L = 0)

(The case L = 0 is used in 4.3.9)

IF

THEN

ELSE

4.3.13 “SOLVE MONEY”: This device ascertains that no step in SEARCH leads to less expected profits in money terms than in position before. If decrease step back to earlier position and EXIT with plan. (This block is not being used for the moment).

4.3.14 “SOLVE”: This device solves the equation:

for QPLANL, with an error less than 0.1%. Once QPLANL is found, QPLANQ is also calculated as

The equation is

Substitute

With a substitution this gives

or

with

(b > 0 must hold when we enter SOLVE, else no solution can be found).

We use Newton-Raphson’s formula

with the starting value , which is surely greater than the exact root, and gives convergence with all positive.

For 0 < b < 1, the algorithm gives the correct result f(y) = 0. The possibility of b ≤ 0 must be checked, however.

4.4 Intermediate Products

The main part of this block has been moved to 5.4.3.2. Now QPLANQ is saved before it is changed in the labour market block.

4.4.1

5 **Labour Market**

5.1 (This block does no longer exist)

5.2 (This block does no longer exist)

5.3 Government Sector Labour Market

(GLABOUR)

Government sector takes the labour it wants from the pool of unemployed. Wage increase is equal to average wage increase in industry last quarter.

5.3.1

(QREALCHLG is entered exogenously)

5.3.2

5.3.3

Notice that if QCHLG < 0, this means that people are fired from government sector.

5.3.4

5.3.5

5.4 Industry Sector Labour Market

(INDLABOUR)

This block consists of three parts:

– Labour search

– Labour update

– Revision of production plans

They are all further specified below.

5.4.1 Labour Search

(LABOUR SEARCH INPUT; CONFRONT; LABOUR SEARCH OUTPUT)

Describes the sequence of actions that determine the labour force in every firm for the next quarter.

In LABOUR SEARCH INPUT (5.4.1.0) some help variables are introduced.

In CONFRONT (5.4.1.1 – 5.4.1.11) the actual interaction for new labour takes place.

Firms are ranked in order of the planned relative change in recruitment. Each firm is allowed to “attack” another firm, chosen at random. The desired change in new employment (CHL) is continuously changed. Firms strive to make CHL equal to zero. Firms that achieve this objective refrain from further raiding of other firms. This procedure is repeated NITER times (NITER is a model parameter).

In LABOUR SEARCH OUTPUT (5.4.1.12 – 5.4.1.13), results are summarized, and layoff lags accommodated.

5.4.1.0 Desired change in labour force, and initial wage offering:

IF

THEN

ELSE

L concatenated to LU (The pool of unemployed will take part in the interactions)

5.4.1.1 Rank firms in decreasing order after .

5.4.1.2 Repeat 5.4.1.3 – 5.4.1.11 NITER times (one time representing one attack from each firm).

5.4.1.3 Repeat 5.4.1.4 – 5.4.1.10 for each firm.

5.4.1.4 Select the firm that is to perform the next attack (from the ordering in 5.4.1.1). Denote it by I.

5.4.1.5 IF THEN GOTO 5.4.1.10 (in this case the firm does not want any more labour).

5.4.1.6 Choose a firm to attack. Denote the firm being attacked by II. The selection is done at random by a function called HIT. The probability for a certain firm to be chosen is the size of its labour force, divided by the sum of the labour forces in all firms plus the number of unemployed. The relative probability to hit the pool of unemployed is increased by a factor SKREPA.

5.4.1.7 We now check whether the attacked object really was a firm (II ≤ NTOT), or whether it was the pool of unemployed (II = NTOT + 1) (cf. comment to 5.4.1.0).

IF

THEN GOTO 5.4.1.8

ELSE GOTO 5.4.1.9

5.4.1.8 We now check whether the attack was a success (i.e. whether the wage of the attacking firm was high enough) or not.

IF

THEN GOTO 5.4.1.9

ELSE

GOTO 5.4.1.10

5.4.1.9 If we come to this statement, the attack was a success, and labour is moved from firm II to firm I. If the “attacked firm” was the unemployed, (i.e. II = NTOT + 1) the attack is always a success.

IF

THEN

5.4.1.10 One attack is completed, GOTO 5.4.1.3

5.4.1.11 All firms have had the opportunity to attack once, GOTO 5.4.1.2

(Labour market interactions are now completed).

5.4.1.12 Summarize results, abandon help variables:

Last component in LL

5.4.1.13 People who leave one firm for another are subtracted from the layoff-lagging vector AMAN in their first firm.

IF

THEN

(but AMAN3 ≥ 0 must hold)

IF

THEN

(but AMAN2 ≥ 0 must hold)

IF

THEN

(but AMAN1 ≥ 0 must hold)

5.4.2 Labour Update

Layoff is accommodated. Wage increase in the industry is computed. Labour force and wage is updated for each firm, as determined in the previous block.

5.4.2.1 Layoffs; AMAN1 is a limit on how many people a firm can fire this quarter.

5.4.2.2 Wage average and trend:

5.4.2.3 Update labour force and wage:

5.4.2.4 Unemployment:

5.4.3 Revision of Production Plans

(PLANQREVISE)

If a firm has lost too much of its labour force, or could not meet recruitment plans, its production plan must be reduced. The same holds if the firm has too low levels in its input-goods inventories. The new level of production assigned to the variable QQ is determined in this block. Input-goods inventories are updated. Optimum sales volume is computed.

5.4.3.1

(QFR is the production frontier as described in block 4.0)

5.4.3.2 Each firm computes its desired purchasing for each kind of input material used in its production. This is based on current production plan, plus an inventory-correction component. For the time being, no speculative behaviour is assumed. Later, this will be done via the definition of OPTIMSTO (see 8.2.6) considering current and expected future prices.

5.4.3.3

5.4.3.4

5.4.3.5

5.4.3.6

6 **Export Markets**

Export share and supply, price and sales in foreign markets are determined. Export component of industry subsidies is computed.

6.1.1 IF

THEN

ELSE

This formula can make X > 1 or X < 0. If this happens, X is put equal to one (or to zero).

6.1.2

6.1.3

(QDPFOR is entered exogenously.)

(This equation holds both for explicit and external model sectors.)

6.1.4

6.1.5

6.1.6

7 **Domestic Product Markets**

(DOMESTIC MARKET)

This block encompasses the behaviour of firms and households within a complete input-output system for the economy. The supply side includes also imports and external sectors. Demand comes from households, government (consumption and investments), firms and external sectors (input materials and investments, with residential construction as a separate component).

1. Market Entrance

2. Household Initialisation

3. Market Confrontation

4. Computation of Household Expenditures

5. Computation of Total Buying

6. Price Adjustments

7. Compute Imports

8. Domestic Result

9. External Sectors

10. Updating of Households’ Data

11. Indirect Taxes

Computationally, blocks 4, 5, 6 are sub-blocks to “Market Confrontation”.

Functionally, blocks 1, 6, 8 describe the behaviour of firms. Blocks 2, 4, 10 form an integrated model of household behaviour and can be studied separately. Blocks 3, 5, 7, 9, 11 link the pieces of the full input-output system.

The producing sectors in the model (exclusive of government) can be grouped as:

MKT – Explicitly producing sectors

IN – External model sectors

Household expenditure categories include all MKT and IN sectors, plus savings. The following grouping of the categories is more relevant for the households:

NDUR – Services and non-durable goods

DUR – Durable goods

SAV – Saving

7.1 Market Entrance

Each firm computes its optimum sales volume. When determining an initial offering price, firms plan as if prices in domestic and foreign markets will develop similarly. Any changes in indirect taxes are assumed, by firms, to be carried by buyers.

7.1.1

7.1.2

(The average is from firms to markets, giving one preliminary price for each market.)

7.2 Household Initialisation

(HOUSEHOLD INIT)

Households’ total income consists of wages less payroll tax, interests, government transfer payments (where an unemployment compensation is singled out), dividends from firms (previous quarter), and previous quarter’s surplus from external model sectors (these sectors have no labour force; the quantity QINPAY includes both wages and capital income). From total income the income tax is deducted, and the remaining disposable income is distributed among households. Last, each household’s share of required saving (from the previous quarter) is computed.

7.2.1

7.2.2

7.2.3

7.2.4

7.2.5

7.2.6

7.2.7

7.2.8

7.3 Market Confrontation

(MARKET CONFRONT)

Adjust import shares IMP for explicitly producing sectors. Form the vector PT of trial prices. Let supply and demand interact a prespecified number of times.

7.3.1 IF

THEN

ELSE

This formula can make X > 1 or X < 0. If this happens, X is put equal to one (or to zero).

7.3.2

7.3.3 Government consumption in each category:

7.3.4 Perform 7.3.5 – 7.3.7 MARKETITER times:

7.3.5 Compute household expenditures (see 7.4).

7.3.6 Compute total buying (see 7.5).

7.3.7 (Not in the last iteration)

Adjust prices (see 7.6)

7.4 Computation of Household Expenditures

(COMPUTE EXPENDITURES)

This block describes how households react to a set of trial offering prices in the expenditure categories. It will interact with firms several times in an iterative manner. The expenditure categories correspond to the producing model sectors and to savings.

Prices are called PT (trial) and QPH (last quarter’s final prices). QDI comes from block 7.2.

All variables have an order of magnitude referring to one household, not to the aggregate.

7.4.1 Preliminary Consumer Price Index (CPI), based on new prices in all expenditure categories:

2

7.4.2 Essential nondurables consumption (goods and services).

2 Experiments will also be made with the following formula:

7.4.3 Essential consumption of durable goods:

7.4.4 Essential level of saving:

(WHRA is updated in 7.10.4)

7.4.5 Adjustment to income constraint

(”I” denotes NDUR, DUR, SAV)

Where all BETA1 ≥ 0

SUM(BETA2) = 1

SUM(BETA3) = 0

7.4.6

7.4.7 For all non-saving categories QSP ≥ 0 is enforced. Thus, at this stage SUM(QSP) > QDI might hold. This is accommodated in the block 7.10 “Household Update”, where savings are recomputed as a residual.

7.5 Computation of Total Buying

(COMPUTE BUYING)

This block constructs a full demand matrix for the economy in volume terms. The matrix QBUY will have rows corresponding to each MKT and IN producing sector, and columns for input materials, also MKT and IN, plus final demand from G, HH, INV. All equations below result in one component for each producing sector, except for 7.5.6, where the external sectors’ input-output matrix is inverted to generate production for these sectors only.

7.5.1

7.5.2

7.5.3

7.5.4

7.5.5

7.5.6

This sum over QBUY computed other sectors’ demand on goods (input-materials, government, households, investments) from the external sectors.

7.5.7

7.5.8

This gives total purchasing from each sector.

7.6 Price Adjustments

(PRICE ADJUST)

This block describes how firms (in each iteration) adjust their prices, once the market has responded to a set of prices with provisional expenditures.

The common goals of the firms in a market are to keep prices (sales sum) up and the stock at OPTSTO.

7.6.1

7.6.2 IF

THEN

ELSE

where the fraction MAXDP is a model parameter.

7.7 Compute Imports

Import fractions are used to compute normal import volumes for each market, inclusive of external markets. Market interactions may result in a demand that would lower stocks below a minimum level. In that case, “extra” imports are used to satisfy this demand (explicit markets only).

7.7.1

7.7.2

7.7.3 Explicit sectors only:

7.7.4 “Extra” imports:

7.7.5

7.7.6

7.8 Domestic Result

Domestic price is updated in each market (cf. QPH in 7.10.5). Total domestic sales volume is computed for each market.

7.8.1 , i = 1, 2, 3, 4

7.8.2 , i = 5, 6, 7, 8, 9, 10

7.8.3

7.8.4

7.9 External Sectors

Compute foreign and domestic sales for external sectors. Correction for purchases of input materials gives value added. The net cash-flow, being paid to households as wage and capital income next quarter, is computed by subtracting payments for investments from external sectors (residential construction and “other”; both being exogenously specified).

7.9.1

7.9.2

7.9.3

7.9.4

7.9.5

7.9.6

7.10 Updating of Households’ Data

(HOUSEHOLD UPDATE)

This block adjusts household variables after firm-household interactions, resulting in a set of prices and a final household expenditure pattern. Trial prices (PT) are then made final (QPH).

7.10.1 Nondurables consumption

7.10.2 Durables consumption and update

7.10.3 Saving

7.10.4 Addicted levels

(I denotes NDUR and DUR)

7.10.5 Prices

(See note to 7.4.1.)

7.11 Indirect Taxes

Value added tax is calculated for purchases from households and government. If TXVA1 > 0, value added tax is charged also for investments. Last, the share of value added tax that is related to imports is computed. This will be needed later for GNP accounting.

7.11.1

(One component for each explicit and external sector.)

7.11.2 (Only when TXVA1 < 0)

7.11.3

8 **Inventory System**

(STOSYSTEM)

8.1 Distributing Change in Inventories over Firms

(FIRMSTO)

Change in inventories industry by industry is distributed over individual firms. Thereafter domestic sales are calculated for each firm.

8.1.1 For each firm, compute the maximum inventory it could end up with – if domestic sales are zero:

8.1.2 For each firm, compute upper and lower limits to the result of the distribution process below:

8.1.3 For each industry, compute total change in inventories to be distributed between firms:

(The second alternative in the MIN corresponds to waste due to limited inventory capacities.)

8.1.4 TOTCHSTO will be reduced below; record the quarterly change for each industry:

8.1.5 Record the waste for each industry:

8.1.6 Some firms might end up with inventories outside the prespecified limits. We adjust for that:

IF

THEN

ELSE IF

THEN

8.1.7 The rest of TOTCHSTO is distributed over the firms.

IF

THEN

ELSE

8.1.8 Domestic sales are calculated in volume terms:

(where QCHSTO for each firm is the sum of the changes in inventories made in 8.1.6 and 8.1.7).

8.1.9 And domestic sales in money terms, where account is taken for industry subsidies and value added tax:

8.1.10 Industry subsidies are computed as a fraction of domestic sales.

(Note that subsidies were also paid relating to foreign sales; see block 6: Export Markets.)

8.2 Reference Inventory Levels

Minimum, maximum, and optimum levels are computed for finished-goods and input-goods inventories. The levels are a fraction of “current” sales in volume terms:

8.2.0 Estimate “current” sales and price, compatible with longer-term trends.

(J is the number of quarters that are recorded in the CUM43 variables).

8.2.1

8.2.2

8.2.3

8.2.4

8.2.5

8.2.6

9.1 **Calculating Final Prices, Sales, and Profits**

(FINALQPQSQM)

We have the values of prices and sales in foreign and domestic markets, and calculate total sales, average prices, value added, and net sales. This enables us to determine this quarter’s profits.

9.1.1

9.1.2

9.1.3

9.1.4

9.1.5

9.1.6

( is a matrix multiplication between IO and the corresponding domestic prices in each sector)

9.1.7

9.1.8

9.1.9

9.2 **Quarterly Cumulation**

(QUARTERLY CUM)

Investments, production, value added, sales, wage sum, and labour force are cumulated. Up-till-now margin, price, and wage level are computed. (J is the number of the quarter within the year).

9.2.1

9.2.2

9.2.3

9.2.4

9.2.5

9.2.6

9.2.7

9.2.8

9.2.9

9.2.10

9.2.11

10 **Investment Financing**

(INVFIN)

Compute gross cash inflow: sales minus wages and purchases of input materials, plus and minus interests. Update value of production equipment – two depreciations schemes are followed by the firm, one for its own, internal considerations and one for taxation purposes. Update inventory components of balance sheet. Compute corporate taxes, and postulate for dividends that they relate in a certain way to taxes. Now, net cash inflow can be computed, including those subsidies which are considered by firms to be temporary.

Current rate of return gives desired new borrowing; the latter being adjusted for the degree of capacity utilization in the firm. Desired change in the holdings K2 of liquid assets is computed, based on sales level.

Next quarter’s instalment of production equipment is computed, and the corresponding “investment efficiency” (capital-output ratio) is derived.

Last, certain macro-level variables are aggregated for later use.

10.1

10.2 Short-hand variables for inflation of capital equipment:

10.3

10.4

10.5

10.6

10.7

10.8

10.9

10.10

IF , THEN

10.10.1

10.11

(CURS as in 8.2.0)

10.11.1

10.12

(A third-order exponential delay function, with average delay time equal to TMINV).

10.13

(Now follow macro-level monetary aggregates.)

10.14

10.15

10.16

10.17

10.18

11 **Government Accounting**

Incomes are taxes on wages, income, value added, and corporate profits. Expenditures are for wages, investments, purchases, transfers, and business subsidies. This is corrected for interest payments, and quarterly government surplus (or deficit) is computed. The surplus/deficit is accommodated via a combination of domestic and foreign borrowing, and via changes in the stock of money. – After that, all variables are cumulated over the year.

11.1

11.2

11.3

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11.10

(Now follow cumulations.)

11.11

11.12

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11.16

(J is the number of the quarter withing the year.)

11.17

11.18

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11.22

(Exit here if not the last quarter withing the year.)

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12 **Monetary Sector**

12.1 Bank Transactions

This block performs monetary accounting to make possible the determination of money supply in block 12.2: The stock of claims on foreign importers is added to via exports and is depreciated from at a certain rate. A corresponding scheme holds for the stock of debts to foreign exporters, which is updated via imports and maturation. (Note that individual items entering either of these stocks are pooled and lose their identity.) The bank’s holding of foreign liquidity can now be updated, and its holdings of domestic liquidity is updated to a temporary status – this will later be recomputed (block 12.4) when firms’ new deposits and borrowings are known.

12.1.1 Monetary time reaction parameters are affected by the foreign/domestic rate-of-interest differential:

(But enforced within interval ± LAMDA2)

12.1.2

12.1.3

12.1.4

12.1.5

12.1.6

12.1.7

12.1.8

12.1.9

12.1.10

12.2 **Credit Market**

Demand for and supply of funds is computed. In case of excess demand, households are forced to an extra net savings component (up to a ceiling). After that, firms must reduce their claims on new borrowing, to a certain extent. The other major borrower, the Government, never has to reduce its desired new borrowing. Instead, the bank is left with unsatisfied monetary restrictions. – Last, the effect on the rate of interest is computed.

12.2.1

12.2.2 After this quarter’s credit market operations, the bank’s liquidity must not fall below a certain fraction of total borrowing. This gives one limit to the availability of new loans:

12.2.3 Another limit to the availability of loans comes from the stipulation that, after the quarter, the bank’s liquidity must not be below a certain fraction of total deposits:

12.2.4

(It is also possible to specify that supply always equals demand.)

12.2.5

12.2.6

12.2.7

(This last equation holds for each firm, not for the aggregate. It distributes the forced reductions in firms’ borrowing in a simple, proportional fashion.)

12.2.8

(But enforced within interval ± MAXQCHRI)

12.2.9

(But enforced within interval MINRI – MAXRI)

12.2.10 Domestic rates of interest move in parallel with the “nominal” rate RI, with a certain difference between borrowing and lending rates:

12.2.11 Foreign rates of interest are exogenous:

12.3 **Investment Financing Adjustments**

(INVFIN ADJUSTMENTS)

This block completes the account of financial flows within each firm: New borrowing was determined in 12.2.7, and via the desired change in the holdings K2 of liquid assets, investments are computed as a cash-flow residual. The firm’s net worth is then computed. – Last, some macro entities are aggregated.

12.3.1

12.3.2

12.3.3

(Negative investments are not possible; in that case K2 will act as the residual so that desired and actual K2 differ.)

12.3.4

12.3.5

12.3.6

12.3.7 If then (BAD = 0 initially)

12.3.8 If BAD = 6, then nullify

(Now follow macro-level monetary aggregates.)

12.3.9

12.3.10

12.3.11

12.4 **Bank Update**

Now that credit market operations are cleared, the bank’s balance sheet can be completed, and the stock of money computed:

12.4.1

12.4.2

12.4.3

12.4.4

13 **National Accounting**

Gross National Product is computed from supply and demand sides, and at current and fixed prices. – Last, quarterly data is cumulated over the year.

13.1 Current prices; components 13.1.1 – 13.1.5 give GNP from the supply side and 13.1.5 – 13.1.14 give it from the demand side.

(The two sides are always equal in the model.)

13.1.0 Help entities to accommodate changes in inventories:

13.1.1 Production in explicit model sectors:

13.1.2 Production in external sectors: QVAIN

13.1.3 Indirect Taxes:

SUM(QVATAX) + SUM(QCHTSTOCURM) – SUM(QCHTSTOCURF) – QVATAXIMP

13.1.4

13.1.5 Government wages (entering on both sides of the GNP accounting): QWSG

13.1.6 Government purchases:

13.1.7 Private consumption:

13.1.8 Investments made by explicit model sectors:

13.1.9 Investments made by external sectors, exclusive of housing: QINVIN

13.1.10 Investments for residential construction: QINVBLD

13.1.11 Government investments: QINVG

13.1.12 Inventory changes:

13.1.13 Exports: QEXPORT

13.1.14 Imports:

13.2 Fixed prices, deflated to a reference year; components 13.2.1 – 13.2.5 give GNP from the supply side and 13.2.5 – 13.2.14 it from the demand side. (The two sides are always equal in the model).

13.2.1 Production in explicit model sectors:

13.2.2 Production in external sectors:

(13.2.3-4 Not relevant when measuring in fixed prices).

13.2.5 Government wages, deflated to the government wage level of the reference year (and thus assuming no increase of productivity in the Government sector), entering on both sides of the GNP accounting:

13.2.6 Governments purchases:

13.2.7 Private consumption; sum over non-saving categories:

13.2.8 Investments made by explicit model sectors:

13.2.9 Investments made by external sectors, exclusive of housing:

13.2.10 Investments for residential construction:

13.2.11 Government investments:

13.2.12 Inventory changes:

13.2.13 Exports:

13.2.14 Imports:

13.3 Cumulations

13.3.1

13.3.2

13.3.3

13.3.4

(Exit here if not last quarter in the year.)

13.4.1

13.4.2

13.4.3

13.4.4

14 **Yearly Update**

Yearly production, price, wage, sales, margin, value added, and net sales are computed, based on cumulation in block “Quarterly Cum”.

14.1

14.2

14.3

14.4

14.5

14.6

14.7

**Exogenous Variables**

The following variables are entered on a year-to-year basis:

Tax parameters: TXC, TXW, TXWG, TXI2, TXI3

Industry subsidies: RSUBS

The following variables are entered quarterly:

Tax parameters: QCHTXVA1, QCHTXVA2

(updating TXVA1, TXVA2)

Prices: QDPFOR, QDPIN

Public sector: QREALCHLG, QINVG

Interest rates abroad: RIBWFOR, RIDEPFOR

External sectors investments: QINVIN, QINVBLD

The following variables are kept constant:

Technological progress: QDMTEC

Expectations: EXPXDP, EXPXDS, EXPSDW

Labour force: ENTRY, RET

Transfer Payments: RTRANS

The following variables are Government “Policy Options”:

Changes in the monetary base: QMPRINT

Government borrowing abroad: QCHPOSGFOR

**Symbols, parameters and other variables explained**

ALFABW Constant used in INVFIN to determine firms' desired change in borrowing.

ALFA3 Constant used in COMPUTE EXPENDITURES to determine the short-term swap between savings and expenditures on durables.

ALFA4 Constant used in COMPUTE EXPENDITURES to determine the short-term swap between savings and expenditures on durables.

AMAN For each firm, a three-component vector accommodating the two-quarter lag of layoffs. The first component holds the number of people that can be fired this quarter, etc.

BAD Counts number of quarters during which NW < 0.

BETA Constants used to compute optimum finished-goods inventory levels in relation to MINSTO and MAXSTO. Same for all firms within a market.

BETABW Constant used in INVFIN to determine firms' desired change in borrowing.

BETA1 Constants used in COMPUTE EXPENDITURES to adjust household expenditures in different categories to the income constraint. All BETA1 ≥ 0.

BETA2 Constants used in COMPUTE EXPENDITURES to adjust household expenditures in different categories to the income constraint. SUM(BETA2) = 1.

BETA3 Constants used in COMPUTE EXPENDITURES to adjust household expenditures in different categories to the income constraint. SUM(BETA3) = 0.

BIG For each firm, the fraction of current yearly sales that firms consider as maximum for their finished-goods inventories.

BWAΔHECK Subroutine checking each firm's (net worth)/total assets.

BW A firm's total borrowing. Updated in INVFIN ADJUSTMENTS.

BWG Current level of the government's domestic borrowing. Updated in GOVERNMENT ACCOUNTING.

BWGFOR Current level of the government's borrowing abroad. Updated in GOVERNMENT ACCOUNTING.

CHL Each firm's desired change in labour force. A help variable used within LABOUR SEARCH to accommodate market interactions.

CHM For each firm, its change in profit margin from one year to another (a difference between fractions). Computed in YEARLY UPDATE.

CTAX Aggregate corporate taxes for one year. Computed in GOVERNMENT ACCOUNTING.

CUMCTAX Aggregate corporate taxes, cumulated over the year in GOVERNMENT ACCOUNTING.

CUMEXPORT Aggregate export value, cumulated over the year in NATIONAL ACCOUNTING.

CUMGNPCUR The components of the gross national product in current prices, cumulated over the year in NATIONAL ACCOUNTING.

CUMGNPFIX The components of the gross national product in fixed prices, cumulated over the year in NATIONAL ACCOUNTING.

CUMIMPORT Aggregate import value, cumulated over the year in NATIONAL ACCOUNTING.

CUMINTG Government net receipts of interest, cumulated over the year in GOVERNMENT ACCOUNTING.

CUMINV For each firm, a cumulation over the year of its investments. Updated in QUARTERLY CUM.

CUMINVG Government investments, cumulated over the year in GOVERNMENT ACCOUNTING.

CUMITAX Aggregate income taxes, cumulated over the year in GOVERNMENT ACCOUNTING.

CUML For each firm, a cumulation over the year of the number of employed. Updated in QUARTERLY CUM.

CUMLG For the government, a cumulation over the year of the number of employed. Updated in GOVERNMENT ACCOUNTING.

CUMM For each firm, a cumulation over the year of its profit margin. Updated in QUARTERLY CUM.

CUMMPRINT Changes in the monetary base, cumulated over the year in GOVERNMENT ACCOUNTING.

CUMP For each firm, its cumulated sales price within a year. Computed in QUARTERLY CUM.

CUMPURCHG The government's purchases of goods and services (less investments), cumulated over the year in GOVERNMENT ACCOUNTING.

CUMQ For each firm, a cumulation over the year of its production volume. Updated in QUARTERLY CUM.

CUMS For each firm, a cumulation over the year of its sales value. Updated in QUARTERLY CUM.

CUMSNET For each firm, a cumulation over the year of its net sales, less purchases of input materials. Updated in QUARTERLY CUM.

CUMSU For each firm, a cumulation over the year of its sales volume. Updated in QUARTERLY CUM.

CUMSUBS The government's subsidies of the industry, cumulated over the year in GOVERNMENT ACCOUNTING.

CUMTRANS Aggregate government transfer payments to households, cumulated over the year in GOVERNMENT ACCOUNTING.

CUMVA For each firm, a cumulation over the year of its value added. Updated in QUARTERLY CUM.

CUMVATAX Aggregate value added tax, cumulated over the year in GOVERNMENT ACCOUNTING.

CUMW For each firm, its cumulated wage level within a year. Computed in QUARTERLY CUM.

CUMWS For each firm, a cumulation over the year of its wage sum. Updated in QUARTERLY CUM.

CUMWSG Government wage sum, cumulated over the year in GOVERNMENT ACCOUNTING.

CUMWTAX Aggregate payroll taxes, cumulated over the year in GOVERNMENT ACCOUNTING.

CURS Each firm's estimate of its current sales per year, compatible with longer-term trends. Computation is described in STOSYSTEM.

CURP Each firm's estimate of its current sales price, compatible with longer-term trends. Computation is described in STOSYSTEM.

CVA A household's "addicted" consumption volume in each expenditure category (units per quarter). Updated in HOUSEHOLD UPDATE.

DEPG Current level of the Government's domestic bank deposits. Updated in GOVERNMENT ACCOUNTING.

DEPGFOR Current level of the Government's foreign bank deposits. Updated in GOVERNMENT ACCOUNTING.

DISTR A help variable used in FIRMSTO to distribute inventory adjustments among firms.

DP For each firm, its yearly change in sales price (a fraction). Computed in YEARLY UPDATE.

DQ For each firm, its yearly change in production volume (a fraction). Computed in YEARLY UPDATE.

DS For each firm, its yearly change in sales value (a fraction). Computed in YEARLY UPDATE.

DUR A vector index, giving "Consumer durables" /"Industrial investment goods" data from a vector or a matrix.

DVA For each firm, its yearly change in value added (a fraction). Computed in YEARLY UPDATE.

DW For each firm, its yearly wage change (a fraction). Computed in YEARLY UPDATE.

DWG Yearly rate of change in the government wage level. Computed in GOVERNMENT ACCOUNTING.

DWSG Yearly rate of change in the government wage sum. Computed in GOVERNMENT ACCOUNTING.

ELINV An elasticity, reducing firms' desired new borrowing (and hence investments) whenever capacity utilization is low. Used in INVFIN.

ENTRY A parameter regulating the inflow of new persons to the labour market (quarterly fraction of the total labour force). Exogenous and constant.

EPS A constant forcing firms to sharpen their profit-margin targets as compared with historical data.

EXIT For each firm, discrepancy between actual and planned labour force (after market interactions). Help variable used in LABOUR SEARCH to accommodate AMAN layoff lag.

EXPDP Each firm's expected change in sales price for a year (a fraction). Computed in YEARLY EXP.

EXPDS Each firm's expected change in sales for a year (a fraction). Computed in YEARLY EXP.

EXPDW Each firm's expected wage change for a year (a fraction). Computed in YEARLY EXP.

EXPIDP Each firm's "internally" expected change in sales price for a year (a fraction). Updated in YEARLY EXP.

EXPIDS Each firm's "internally" expected change in sales for a year (a fraction). Updated in YEARLY EXP.

EXPIDW Each firm's "internally" expected change in wage for a year (a fraction). Updated in YEARLY EXP.

EXPORT Aggregate export value for one year. Computed in NATIONAL ACCOUNTING.

EXPXDP In each market, the "externally" expected change in sales price for a year (a fraction). Entered exogenously.

EXPXDS In each market, the "externally" expected change in sales for a year (a fraction). Entered exogenously.

EXPXDW In each market, the "externally" expected change in wage for a year (a fraction). Entered exogenously.

E1 A constant used in YEARLY EXP to form "internal" expectations on prices, sales, and wages.

E2 A constant used in YEARLY EXP to form "internal" expectations on prices, sales, and wages.

FASS The Bank's holding of foreign trade credits (claims on foreign importers). Updated in BANK TRANSACTIONS.

FD The sum of the Bank's debts to foreign suppliers of Swedish imports. Updated in BANK TRANSACTIONS.

FIP A constant describing how firms trade off only just experienced price change against longer-term expectations. Used in QUARTERLY EXP.

FIS A constant describing how firms trade off only just experienced sales value change against longer-term expectations. Used in QUARTERLY EXP.

FIW A constant describing how firms trade off only just experienced wage change against longer-term expectations. Used in QUARTERLY EXP.

G Indexing variable, extracting data that relate to government.

GAMMA A constant telling how big wage increase is needed for a person that he should leave this job for a new one. Used in LABOUR SEARCH.

GKOFF Government purchasing (less investments) in each sector, as a fraction of government wage sum.

GNPCUR Gross national product for one year (current prices), with components as indicated in NATIONAL ACCOUNTING.

GNPFIX Gross national product for one year (fixed prices), with components as indicated in NATIONAL ACCOUNTING.

HH Indexing variable, extracting from vectors and matrices data that relate to households.

HISTDP For each firm, a time-smoothed average of its experienced yearly price increase. Updated in YEARLY EXP.

HISTDPDEV For each firm, a time-smoothed average of the difference between actual and expected yearly price increase. Updated in YEARLY EXP.

HISTDPDEV2 For each firm, a time-smoothed average of the square of the difference between actual and expected yearly price increase. Updated in YEARLY EXP.

HISTDS For each firm, a time-smoothed average of its experienced yearly sales increase. Updated in YEARLY EXP.

HISTDSDEV For each firm, a time-smoothed average of the difference between actual and expected yearly sales increase. Updated in YEARLY EXP.

HISTDSDEV2 For each firm, a time-smoothed average of the square of the difference between actual and expected yearly sales increase. Updated in YEARLY EXP.

HISTDW For each firm, a time-smoothed average of its experienced yearly increase in wage level. Updated in YEARLY EXP.

HISTDWDEV For each firm, a time-smoothed average of the difference between actual and expected yearly increase in wage level. Updated in YEARLY EXP.

HISTDWDEV2 For each firm, a time-smoothed average of the square of the difference between actual and expected yearly increase in wage level. Updated in YEARLY EXP.

IMBETA Constant used to compute optimum input-goods inventory level in relation to MINIMSTO and MAXIMSTO. Same for all firms.

IMBIG That fraction of one year's use of a certain input good, which a firm considers as the maximum inventory level for that good. Individual for each firm.

IMP Import share for each explicit and external sector. Updated in MARKET CONFRONT (explicit sectors only).

IMPORT Aggregate import value for one year. Computed in NATIONAL ACCOUNTING.

IMSMALL That fraction of one year's use of a certain input good, which a firm considers as the minimum inventory level for that good. Individual for all firms.

IMSTO For each firm, the inventory level for each kind of input good. Updated in PLANQREVISE.

IN Indexing variable, extracting external-sectors data from any vector or matrix.

INTG Net interest receipts by the government for one year. Updated in GOVERNMENT ACCOUNTING.

INV Indexing variable, extracting from vectors and matrices data that relate to investments.

INVEFF For each firm, its investment efficiency (increase in quarterly production value, divided by investment). Computed in INVFIN.

INVG Government investments for one year, updated in GOVERNMENT ACCOUNTING.

IO

Market-input-output-coefficients. The amount of each kind of input material that a firm needs for its production. Same for all firms in a market; expressed as volume fractions of production. Assumed to be constant.

IO2 The amount of each kind of input material from explicit model sectors that is needed for production in each of the external sectors. Expressed as volume fractions of production and assumed constant.

IO3 The amount of each kind of input material from external sectors that is needed for production in each of the external sectors.

IOTA A constant used by firms to form their initial wage offer in LABOUR SEARCH.

ITAX Aggregate income taxes for one year, updated in GOVERNMENT ACCOUNTING.

J Counts the quarters within the year.

KAPPA1 A constant giving the maximum fraction of household's disposable income that can be stipulated as a reduction in household borrowing (increased net savings) in case of excess demand on the credit market.

KAPPA2 A constant giving the maximum fractional reduction of firms' desired new borrowing in case of excess demand on the credit market.

KSI A constant, used in LABOUR SEARCH, which tells by how much a firm raises its own wage level after it has performed an unsuccessful attack.

K1 For each firm, the replacement value of its production equipment. Updated in INVFIN.

K1BOOK For each firm, the book value (for taxation purposes) of its production equipment. Updated in INVFIN.

K2 For each firm, its current assets. Updated in INVFIN ADJUSTMENTS.

K3 For each firm, the value of its total inventory: The sum of K3IMED and K3FINISH.

K3IMED For each firm, the value of its input-goods inventory. Computed in INVFIN.

K3FINISH For each firm, the value of its finished-goods inventory. Computed in INVFIN.

L For each firm, its labour force. Updated in LUUPDATE (retirements) and in LABOUR UPDATE (other changes).

LAMDA1 A constant used to compute the change in the rate of interest effected by supply-demand conditions in CREDIT MARKET.

LAMDA2 A constant that indicates how the foreign/domestic differential in the rate of interest impacts on average payment times for foreign trade credits. Used in BANK TRANSACTIONS.

LAYOFF For each firm, discrepancy between actual and planned labour force (before market interactions). Help variable ng in TARGET SEARCH to accommodate AMAN layoff lag.

LF Total labour force in the economy. Updated in LUUPDATE.

LG Government labour force. Updated in GLABOUR.

LIMSTO For each firm, the inventory level that it would end up with at zero domestic sales. A help variable used within STOSYSTEM.

LIQB The bank's holdings of "liquidity", of an unspecified nature. Updated in BANK UPDATE.

LIQBFOR The bank's current holdings of foreign "liquidity", of an unspecified nature. Updated in BANK TRANSACTIONS.

LL Each firm's labour force. A help variable used within LABOUR SEARCH to accommodate the market interactions.

LOSS A constant, telling how much of firms' investments that are directed to the structural slack.

LOWER For each firm, the minimum inventory level it could ever end up with. A help variable used within STOSYSTEM.

LU Number of people unemployed. Updated in LUUPDATE and at various places within the block LABOUR MARKET.

M For each firm, its yearly profit margin (a fraction). Computed in YEARLY UPDATE.

MARKETITER Number of iterations on the domestic product market. Used in MARKET CONFRONT.

MAXDP A fraction which determines the maximum yearly deviation in domestic prices from what firms expect. Used in ADJUST PRICES to accommodate supply-demand interactions.

MAXIMSTO For each firm, its "maximum" level for inventories of each kind of input good (volume terms). Computation is described within block STOSYSTEM.

MAXQCHRI A limit on the rate of change for the rate of interest; used in CREDIT MARKET.

MAXRI A ceiling on the rate-of-interest movements, used in CREDIT MARKET.

MAXRIDIFF The maximum difference between foreign and domestic rate of interest, which is allowed to have an impact on the rate of payment of foreign trade credits. Used in BANK TRANSACTIONS.

MAXSTO For each firm, its "maximum" inventory level (volume terms). Computation is described within block STOSYSTEM.

MB The prescribed differential between domestic borrowing and lending rates of interest.

MHIST For each firm, an average of past profit margins (a fraction). Updated in YEARLY TARG.

MINIMSTO For each firm, its "minimum" level for inventories of each kind of input good (volume terms). Computation is described within block STOSYSTEM.

MINRI A floor for the rate-of-interest movements, used in CREDIT MARKET.

MINSTO For each firm, its "minimum" inventory level (volume terms). Computation is described within block STOSYSTEM.

MKT Index variable, extracting data that apply to explicit markets.

MONEY The stock of money in the economy, defined as total deposits in the bank. Computed in BANK UPDATE.

MPRINT One year's change in the monetary base (absolute value). Computed in GOVERNMENT ACCOUNTING.

MTEC On each market, technology factor of modern equipment (potentially produced units per person and quarter). Updated in PRODFRONT.

NDUR Index variable, extracting from household "expenditure category" vectors data that apply to non-durable consumption categories.

NH Number of households – a constant.

NITER Number of iterations on the labour market each quarter. Used in LABOUR SEARCH.

NOW Number of people hired in one successful attack on the labour market. A help variable used within CONFRONT.

NTOT The current number of firms in the simulation.

NW For each firm, its net value as the residual between total assets and borrowing. Computed in INVFIN ADJUSTMENTS.

NWB The net value of the bank, as the residual between assets and liabilities. Computed in BANK UPDATE.

OMEGA A distribution vector indicating how firms' outlays for investments are allocated on purchases from different model sectors. Assumed to be equal for all firms.

OMEGABLD A distribution vector indicating how investments in residential construction result in purchases from different model sectors.

OMEGAG A distribution vector indicating how government investments result in purchasing from different model sectors.

OMEGAIN A distribution vector indicating how investments from external sectors (less residential construction) result in purchases from different model sectors.

OPTIMSTO For each firm, its optimum inventory level for each kind of input good (volume terms). Computed in STOSYSTEM.

OPTSTO For each firm, the "optimum" level for its finished-goods inventory (volume terms). Computation is described within block STOSYSTEM.

ORD Vector, telling in which sequence firms are allowed to make attacks on the labour market (big relative recruitment plan goes first).

P For each firm, its yearly average sales price. Computed in YEARLY UPDATE. This price includes any sales-based subsidies but not value added tax.

POSG The government's net position in the bank. Updated in GOVERNMENT ACCOUNTING.

POSGFOR The government's net foreign deposit/borrowing position. Updated in GOVERNMENT ACCOUNTING.

PREF Domestic prices for each model sector from a reference year. Used in NATIONAL ACCOUNTING.

PRIMCHSTO A help variable used in FIRMSTO to distribute inventory adjustments among firms.

PROPCHSTO A help variable used in FIRMSTO to distribute inventory adjustments among firms.

PT On each market, the offering price in one iteration. First computed in MARKET CONFRONT; later updated in ADJUST PRICES.

PURCHG For each model sector, the government's purchases of goods and services (less investments) for one year. Computed in GOVERNMENT ACCOUNTING.

Q For each firm, its total production for a year (volume). Updated in YEARLY UPDATE.

QBUY A matrix giving total quarterly purchasing in volume terms by each sector from each sector (both explicit and external sectors). Computed in COMPUTE BUYING for each iteration on the domestic product market.

QC A household's consumption in each of the non-savings expenditure categories (value per quarter). Computed in HOUSEHOLD UPDATE.

QCASH For each variable, the net cash inflow during one quarter, before new borrowing and payments of investments. Computed in INVFIN.

QCHBW For each firm, its quarterly change in borrowing, computed in CREDIT MARKET.

QCHDCPI Attempted rise in consumer price index between quarters (a fraction). Computed in COMPUTE EXPENDITURES each time households meet an offering price vector PT.

QCHFASS The quarterly change in the aggregate stock of trade credits to foreigners. Computed in BANK TRANSACTIONS.

QCHFD The quarterly change in the aggregate stock of trade debts to foreigners. Computed in BANK TRANSACTIONS.

QCHK2 For each firm, its quarterly change in current assets. Computed in INVFIN ADJUSTMENTS.

QCHL For each firm, its quarterly labour force changes due to labour market interactions (retirements are not included). Computed in LABOUR SEARCH; updated in LABOUR UPDATE if layoffs occur.

QCHLG Number of new persons in government sector labour force each quarter (including replacements for retirements).

QCHLIQB The quarterly change in the bank's liquidity. Preliminarily computed in BANK TRANSACTIONS, and finally established in BANK UPDATE.

QCHLIQBFOR The quarterly change in the bank's foreign liquidity. Computed in BANK TRANSACTIONS.

QCHPOSG The quarterly change in the government's net position in the bank. Computed in GOVERNMENT ACCOUNTING.

QCHPOSGFOR The quarterly change in the government's net foreign deposit/borrowing position. Entered in GOVERNMENT ACCOUNTING as a policy option.

QCHQTOP For each firm, quarterly change in production capacity QTOP due to investments. Computed in PRODFRONT.

QCHQTOP1 Production capacity increase that can be used regardless of slack considerations. Computed in PRODFRONT.

QCHQTOP2 That part of a production capacity increase which goes into the firm's slack. Computed in PRODFRONT.

QCHRI Quarterly change in the base rate of interest. Computed in CREDIT MARKET.

QCHRU Quarterly change in rate of unemployment (a difference between fractions). Computed in LABOUR UPDATE.

QCHTSTO On each market, total quarterly change in inventory to be distributed between firms. Computed in FIRMSTO.

QCHTSTOCURF Quarterly change in aggregate (sector-level) inventories, value at factor prices. Help variable used in NATIONAL ACCOUNTING.

QCHTSTOCURM Quarterly change in aggregate (sector-level) inventories, valued at factor prices. Help variable used in NATIONAL ACCOUNTING.

QCHTXVA1 Quarterly change in value-added tax rate for investment goods. Entered exogenously.

QCHTXVA2 Quarterly change in value-added tax rate for non-investment goods. Entered exogenously.

QCHW For each firm, its quarterly wage change in absolute terms. Computed in LABOUR SEARCH.

QCPI Consumer price index, updated in HOUSEHOLD UPDATE.

QCTAX Aggregate corporate taxes during one quarter. Computed in INVFIN.

QDCPI Quarterly change in consumer price index (a fraction). Computed in HOUSEHOLD UPDATE.

QDEMFUND Total demand on funds for new borrowing during one quarter, from firms and the government. Computed in CREDIT MARKET.

QDEPR For each firm, the quarterly depreciation of its production equipment at replacement value. Help variable in INVFIN.

QDEPRBOOK For each firm, the quarterly depreciation of its production equipment at book value (for taxation purposes). Help variable in INVFIN.

QDESCHBW For each firm, its desired new borrowing for one quarter. Computed in INVFIN based on current real rate of return and on the capacity utilization within the firm.

QDESCHK2 For each firm, its desired change in current assets, to make these a certain proportion of sales. Computed in INVFIN.

QDI A household's disposable income for one quarter. Computed in HOUSEHOLD INIT.

QDIV For each firm, its quarterly payments of dividends to the household aggregate. Computed in INVFIN.

QDMTEC On each market, the rate of technology upgrade for production equipment (a fraction on quarterly basis). Entered exogenously.

QDP For each firm, its quarterly increase in sales price (a fraction). Computed in FINALQPQSQM.

QDPDOM On each market, the quarterly increase in domestic price (a fraction). Computed in DOMESTIC RESULT.

QDPFOR On each market, the quarterly increase in foreign price (a fraction). Exogenously entered in EXPORT MARKETS.

QDPIN For each external sector, the quarterly increase in domestic price including value added tax (a fraction). Entered exogenously.

QDPK One quarter's relative price increase for investment goods. A help variable computed in INVFIN, equal for all firms.

QDQ For each firm, its quarterly increase in production volume (a fraction). Computed in PLANQREVISE.

QDS For each firm, its quarterly increase in sales value (a fraction). Computed in FINALQPQSQM.

QDVA For each firm, its quarterly increase in value added in current prices (a fraction). Computed in FINALQPQSQM.

QDW For each firm, its quarterly wage increase (a fraction). Computed in LABOUR UPDATE.

QDWG The quarterly increase (a fraction) in government wage level. Computed in GLABOUR.

QDWIND Average wage increase in the industry during one quarter (a fraction). Computed in LABOUR UPDATE.

QEXPDP For each firm, its expectation on price increase for the next quarter (a fraction). Help variable used in QUARTERLY EXP.

QEXPDS For each firm, its expectation on sales value increase for the next quarter (a fraction). Help variable used in QUARTERLY EXP.

QEXPDW For each firm, its expectation on wage increase for the next quarter (a fraction). Help variable used in QUARTERLY EXP.

QEXPORT Aggregate export value during one quarter. First computed in EXPORT MARKETS, and then added to in EXTERNAL SECTORS.

QEXPORTIN For each external sector, the export value during one quarter. Computed in EXTERNAL SECTORS.

QEXPP For each firm, its expected sales price for the next quarter. Computed in QUARTERLY EXP.

QEXPPIM For each kind of input good, the expected purchase price for a quarter. Computed in QUARTERLY EXP; assumed to be same for all firms.

QEXPPNET For each firm, an expected "net" sales price for the next quarter, with reductions for purchases of input goods. Help variable in TARGET SEARCH.

QEXPS For each firm, its expected sales value for the next quarter. Computed in QUARTERLY EXP.

QEXPSU For each firm, its expected sales volume for the next quarter. Computed in INITPRODPLAN.

QEXPW For each firm, its expected wage level for the next quarter (expressed on a yearly basis). Computed in QUARTERLY EXP.

QFASSPAY One quarter's payment of trade credits, reducing the stock FASS of claims on foreigners. Computed in BANK TRANSACTIONS.

QFDPAY One quarter's payments of trade debts, reducing the stock FD of debt to foreigners. Computed in BANK TRANSACTIONS.

QFR For each firm, its production possibility frontier (volume per quarter) as a function of its labour force. Computation is described within block PRODPLAN.

QGNPCUR Gross national product during one quarter (current prices), with components as indicated in NATIONAL ACCOUNTING.

QGNPFIX Gross national product during one quarter (fixed prices), with components as indicated in NATIONAL ACCOUNTING.

QIMPORT Aggregate import value during one quarter. Computed in COMPUTE IMPORTS.

QIMPURCHIN For each external model sector, the value of input-good purchases by the sector during one quarter. Computed in EXTERNAL SECTORS.

QIMQ For each firm and each kind of input good, the quantity (volume terms) that the firm buys of that good during one quarter. Computed in INTERMEDIATE PRODUCTS.

QINPAY Households' aggregate wage and capital income from the external sectors during one quarter. Computed in EXTERNAL SECTORS.

QINTF Aggregate interest payments from firms to the bank during one quarter. Computed in INVFIN.

QINTG Net domestic interest receipts by the government during one quarter. Computed in GOVERNMENT ACCOUNTING.

QINTGFOR Net foreign interest receipts by the government during one quarter. Computed in GOVERNMENT ACCOUNTING.

QINTH Aggregate interest receipts by households during one quarter. Computed in HOUSEHOLD INIT.

QINTK2 Aggregate interest receipts by firms during one quarter. Computed in INVFIN.

QINV For each firm, its quarterly installed investments (value terms). Computed in INVFIN.

QINVBLD Aggregate investments in residential construction during one quarter. Entered exogenously and paid for by one external model sector.

QINVG Government investments during one quarter, exogenously entered.

QINVIN Aggregate investments by external sectors during one quarter (less residential construction). Entered exogenously.

QINVLAG For each firm, the money allocated for investments during one quarter, entering as demand on the product market next quarter. Computed in INVFIN ADJUSTMENTS.

QINVTOT Aggregate investments in the economy (money terms) during one quarter. One component for each sector delivering goods for investments; a help variable used in COMPUTE BUYING.

QITAX Aggregate income taxes during one quarter. Computed in HOUSEHOLD INIT.

QM For each firm, its profit margin during a quarter (a fraction). Calculated in FINALQPQSQM.

QMAXTSUDOM For each explicit market, maximum sales volume for a quarter due to MINSTO considerations. Help variable used within COMPUTE IMPORTS.

QMPRINT One quarter's change in the monetary base (absolute value). Entered in GOVERNMENT ACCOUNTING as a policy option.

QOPTSU For each firm, its optimum sold volume during a quarter. Computed in PLANQREVISE.

QOPTSUDOM Optimum sold volume on the domestic market (units per quarter). Computed for each firm in MARKET ENTRANCE.

QP For each firm, its sales price during a quarter (an average between foreign and domestic price). Updated in FINALQPQSQM. This price includes any sales-based subsidies, but not value added tax.

QPDOM On each market, the domestic price during one quarter. Updated in DOMESTIC RESULT. This price. Includes value added tax.

QPFOR On each market, the foreign price during one quarter. Updated in EXPORT MARKETS. This price does not include value added tax.

QPFORIN For each external sector, the foreign price during one quarter, not including value added tax. Updated in EXTERNAL SECTORS.

QPH Domestic price in each expenditure category as households see them. Updated in HOUSEHOLD UPDATE.

QPLANL For each firm, its planned labour force for a quarter. Computed in TARGET SEARCH.

QPLANQ For each firm, its planned production volume during a quarter. Computed in INITPRODPLAN; revised in TARGET SEARCH and in PLANQREVISE.

QPRELCPI Preliminary consumer price index. Computed in COMPUTE EXPENDITURES each time households meet an offering price vector PT.

QPRELPDOM On each explicit market, the firms' initial offering price. Computed in MARKET ENTRANCE.

QPURCHG For each model sector, the government's purchases (money terms) of goods and services (less investments) during one quarter. Computed in MARKET CONFRONT.

QQ Production for a firm (units per quarter). Computed in PLANQREVISE.

QQIN For each external sector, its aggregate production volume during one quarter. Updated in EXTERNAL SECTORS.

QREALCHLG Quarterly net change in government employment (number of persons). Entered exogenously in GLABOUR.

QRED For each firm, the forced reduction (if any) in one quarter's production volume due to insufficient inventories of input-materials. Help variable in PLANQREVISE.

QREDTBW The total quarterly amount by which firms must lower their desired new borrowing, in the case of excess demand for funds. Help variable in CREDIT MARKET.

QREV For each firm, its quarterly gross revenue: Sales less wages and purchases of input materials, plus and minus interests. Help variable in INVFIN.

QRR For each firm, its rate of return before taxes (a fraction on a yearly basis). Computed in INVFIN each quarter.

QS For each firm, its sales value during one quarter. Computed in FINALQPQSQM.

QSAVH Aggregate household savings (per quarter). Computed in HOUSEHOLD UPDATE.

QSAVHREQ One quarter's reduction in aggregate household borrowing (forced increase in net savings), in the case of in excess demand for funds. Computed in CREDIT MARKET.

QSDOM For each firm, its domestic sales value during one quarter. Computed in FIRMSTO.

QSDOMIN For each external sector, its aggregate sales value during one quarter. Computed in EXTERNAL SECTORS.

QSFOR For each firm, its foreign sales value during one quarter. Computed in EXPORT MARKETS.

QSNET For each firm, its net sales value (less purchases of input goods) during one quarter. Computed in FINALQPQSQM.

QSP Household expenditure in each category (value per quarter and household). Computed in COMPUTE in each iteration on the domestic market.

QSPE "Essential" household expenditures in each category (value per quarter and household). Help variable used within COMPUTE EXPENDITURES.

QSPG Total government expenditures (less investments and interest payments) during one quarter. Updated in GOVERNMENT ACCOUNTING.

QSPSAVREQ For each household, one quarter's reduction in new borrowing (forced increase in new savings) in the case of excess demand for funds. Computed in HOUSEHOLD INIT.

QSU For each firm, its sales volume during one quarter. Computed in FINALQPQSQM.

QSUBS One quarter's total subsidy payments to firms from the government. Computed in GOVERNMENT ACCOUNTNG as the sum over three components.

QSUBSDOM One quarter's subsidy payments, related to domestic sales, to firms from the government. Computed in FIRMSTO.

QSUBSFOR One quarter's subsidy payments, related to exports, to firms from the government. Computed in EXPORT MARKETS.

QSUBSCASH One quarter's temporary subsidy payments ("liquidity injections") to firms from the government. Computed in INVFIN.

QSUDOM For each firm, its domestic sales volume during one quarter. Computed in FIRMSTO.

QSUFOR For each firm, its foreign sales volume during one quarter. Computed in EXPORT MARKETS.

QSUPFUND Availability of funds for new borrowing during one quarter, in concordance with prevailing monetary restrictions. Computed in CREDIT MARKET.

QSUPFUND1 Ceiling on the availability of funds for new borrowing during one quarter, related to the bank's necessity to have a liquidity in proportion to its total lending. Help variable in CREDIT MARKET.

QSUPFUND2 Ceiling on the availability of funds for new borrowing during one quarter, related to the bank's necessity to have a liquidity in proportion to total deposits in the bank. Help variable in CREDIT MARKET.

QSURPLUSG The government's surplus during one quarter. Computed in GOVERNMENT ACCOUNTING.

QTARGM For each firm, its profit-margin target for a quarter (a fraction). Computed in QUARTERLY TARG.

QTAX For each firm, the corporate tax that it pays during one quarter. Help variable in INVFIN.

QTBUY Aggregate purchasing (including imports) from each model sector during one quarter. Computed in COMPUTE BUYING (volume terms).

QTBUYDOM Aggregate purchasing (exclusive of imports) from each model sector during one quarter. Computed in COMPUTE IMPORTS (volume terms).

QTBUYFOR1 One quarter's aggregate "normal" (related to an import fraction) imports within each model sector. Computed in COMPUTE IMPORTS (volume terms).

QTBUYFOR2 One quarter's aggregate "extra" (in cases of large excess demand) imports within each explicit model sector. Computed in COMPUTE IMPORTS (volume terms).

QTCHBW One quarter's total new borrowing for all firms. Computed in INVFIN ADJUSTMENTS.

QTDIV One quarter's aggregate payments of dividends from firms to households. Updated in INVFIN.

QTI Total household incomes (before taxes) during one quarter. Computed in HOUSEHOLD INIT.

QTOP Potential output for a firm (units per quarter) at zero slack and infinite labour force. Updated in PRODFRONT.

QTRANS One quarter's transfer payments from government to the household aggregate. Computed in HOUSEHOLD INIT.

QTSUDOM For each explicit model sector, the quarterly sold volume on the domestic product market (exclusive of imports). Computed in DOMESTIC RESULT.

QTTAX Total tax receipts by the government during one quarter. Updated in GOVERNMENT ACCOUNTING.

QTWS Total wage sum in the economy (before payroll taxes) during one quarter. Help variable in HOUSEHOLD INIT.

QVA For each firm, its value added during one quarter. Computed in FINALQPQSQM.

QVAIN For external sectors, its value added during one quarter. Computed in EXTERNAL SECTORS.

QVATAX For each model sector, the value added tax generated during one quarter. Computed in INDIRECT TAXES.

QVATAXIMP That part of total value added taxes, generated during one quarter, which is related to imports.

QW For each firm, its wage level (expressed on a yearly basis) during one quarter. Updated in LABOUR UPDATE. The wage includes any payroll taxes.

QWASTE For each explicit sector, the waste that occurs (during one quarter) in case of insufficient finished-goods inventory capacities. Computed in FIRMSTO.

QWG Government wage level (expressed on a yearly basis) during one quarter. Updated in GLABOUR. The wage includes any payroll taxes.

QWSG The government's wage sum during one quarter, including any payroll taxes. Computed in GOVERNMENT ACCOUNTING.

QWTAX Aggregate payroll taxes for one year. Updated in GOVERNMENT ACCOUNTING.

Q2 For each firm, maximum production for a quarter regarding sales plan and inventory maximum. Help variable used within TARGET SEARCH.

Q3 For each firm, maximum production for a quarter regarding actual labour force and slack limitations. Help variable used in TARGET SEARCH.

Q7 For each firm, a quarterly production level, below which structural slack is activated. Help variable used within TARGET SEARCH.

R A constant implying how much firms rely on external information when they form expectations (in YEARLY EXP).

REDCHBW Maximum allowed change in borrowing (fraction of BW). Currently REDCHBW = 0.15.

RES Structural slack for a firm (fraction). Updated in PRODFRONT and (under target pressure only) in TARGET SEARCH.

RESDOWN A constant telling by how much firms can reduce their slack during one quarter.

RESMAX A constant telling maximum slack any firm can have.

RET Retirement rate on the labour market (a fraction on quarterly basis).

RFPAY A variable, accounting for the effect of foreign/domestic rate-of-interest differentials on payment periods for foreign trade credits and debts. Help variable in BANK TRANSACTIONS.

RFQ For each firm, the minimum labour force needed as a function of desired production (volume per quarter). The computation is described within block PRODPLAN; this is the inverse function to QFR(L).

RFUND1 A fraction indicating the liquidity restriction on the bank as regards total lending. Used in CREDIT MARKET.

RFUND2 A fraction indicating the liquidity restriction on the bank as regards total deposits. Used in CREDIT MARKET.

RHO Physical depreciation rate of production equipment (a fraction on quarterly basis).

RHOBOOK Maximum allowed depreciation rate of production equipment, for taxation purposes. A fraction on quarterly basis.

RHODUR Depreciation rate of consumer durable goods (a fraction on quarterly basis).

RI The base rate of interest, in parallel with which all other domestic rates move. Updated in CREDIT MARKET.

RIBWFOR The exogenous foreign lending rate of interest.

RIBWG The rate of interest on the government's domestic borrowing. Updated in CREDIT MARKET.

RIBWGFOR The rate of interest on the government's foreign borrowing. Updated in CREDIT MARKET.

RIDEPFOR The exogenous foreign deposit rate of interest.

RIDEPG The rate of interest on the government's domestic deposits. Updated in CREDIT MARKET.

RIDEPGFOR The rate of interest on the government's foreign deposits. Updated in CREDIT MARKET.

RIF The rate of interest on firms' borrowing from the bank. Updated in CREDIT MARKET.

RIH The rate of interest on household savings. Updated in CREDIT MARKET.

RIK2 The rate of interest on firms' deposits in the bank. Updated in CREDIT MARKET.

RLU Fraction used in HOUSEHOLD INIT to compute unemployment compensation in proportion to average wage level in the industry.

RSUBS Fraction used in EXPORT MARKETS and FIRMSTO to compute government subsidies to firms in relation to their sales value. Same for all firms in a market.

RSUBSCASH Fraction used in INVFIN to compute temporary government subsidies to firms ("liquidity injections"), in relation to sales value.

RTD Ratio between firms' dividend payments and corporate taxes; used in INVFIN. Assumed constant and assumed equal for all firms.

RTRANS Ratio between total transfer payments to households (less unemployment compensation) and total taxes. Used in HOUSEHOLD INIT; Assumed constant.

RU Rate of unemployment (a fraction). Computed in LABOUR UPDATE.

RW A constant giving firms' desired amount of working capital (K2) as a fraction of current yearly sales.

S For each firm, its sales value for one year. Updated in YEARLY UPDATE.

SACK For each firm, the number of people fired during a quarter. Help variable within LABOUR UPDATE.

SAV Indexing variable, giving savings component of household expenditure vectors.

SHARE sharei IOjm = purchasing share (fraction of prod.) of product j for firm i where firm i belongs to product market.

i = firm-index (1,…10)

j = product-index (1,…10)

m = product-index (1,…10)

SHORTAGE For each firm and each kind of input good, the discrepancy between the quantity of the good, needed to fulfil production plans a certain quarter, and the available quantity (zero if supplies are enough). Help variable in PLANQREVISE.

SKREPA A constant factor by which the probability for the pool of unemployed to be selected at a labour market attack is upgraded, as compared with the probability for any firm to be selected. Used in CONFRONT.

SMALL For each firm, the fraction of current yearly sales that firms consider as minimum for their finished-goods inventories.

SMOOTH Constant used by households to (each quarter) time-smooth their addicted consumption levels and savings ratio.

SMP Constant used by firms to (each year) time-smooth their price experiences.

SMS Constant used by firms to (each year) time-smooth their sales experiences.

SMT Constant used by firms to (each year) time-smooth their profit-margin experiences.

SMW Constant used by firms to (each year) time-smooth their wage experiences.

SNET For each firm, its net sales value (less purchases of input goods) for one year. Computed in YEARLY UPDATE.

SPG Total government expenditures (less investments and interest payments) for one year. Computed in GOVERNMENT ACCOUNTING.

STO For each firm, its current inventory level (volume terms). Updated in FIRMSTO.

STODUR Each household's stock of durable goods (value terms). Updated in HOUSEHOLD UPDATE.

SUBS One year's total subsidy payments to firms from the government. Updated in GOVERNMENT ACCOUNTING.

SURPLUSG The government's surplus for one year. Computed in GOVERNMENT ACCOUNTING.

SWAP A factor determining the short-term trade-off between savings and expenditures on consumer durables. Computed in COMPUTE EXPENDITURES.

TARGM For each firm, its profit-margin target for one year (a fraction). Computed in YEARLY TARG.

TEC Technology factor for a firm (units per person and quarter). Updated in PRODFRONT.

THETA Maximum fraction of a firm's labour force that it can lose in one labour market attack. Used in LABOUR SEARCH.

TMFASS Average payment period for foreign trade credits; used in BANK TRANSACTIONS.

TMFD Average payment period for foreign trade debts; used in BANK TRANSACTIONS.

TMIMP For each market, the time constant to adjust import share in MARKET CONFRONT.

TMIMSTO Time constant for firms when adjusting finished-goods inventories. Used in INTERMEDIATE PRODUCTS. Assumed to be equal for all firms.

TMINV Average delay time to install investments in new production equipment. Used in INVFIN; assumed to be equal for all firms in a market.

TMSTO Time constant for firms when adjusting finished-goods inventory discrepancy (years). Used in INITPRODPLAN and in PLANQREVISE.

TMX Time constant for firms when they adjust export share in EXPORT MARKETS (years; common to all firms on a market).

TOTCHSTO For each explicit market, the total change in finished-goods inventories that remains to be distributed between firms. Help variable in FIRMSTO.

TRANS One year's transfer payments from the government to the household aggregate. Computed in GOVERNMENT ACCOUNTING.

TSTOCURF For each explicit sector, the aggregate finished-goods inventories at current factor prices. Updated in NATIONAL ACCOUNTING.

TSTOCURM For each explicit sector, the aggregate finished-goods inventories at current market prices.

TXC The exogenous corporate-tax rate.

TXI2 An exogenous income-tax parameter.

TXI3 An exogenous income-tax parameter.

TXVA1 The exogenous value-added-tax rate (investment goods only).

TXVA2 The exogenous value-added-tax rate (non-investment goods).

TXW The exogenous payroll-tax rate for the non-government sectors.

TXWG The exogenous payroll-tax rate for government sectors.

UPPER For each firm, the maximum inventory level it could ever end up with. A help variable in STOSYSTEM.

UTREF A reference" level of capacity utilization. Used in INVFIN when firms form their desired new borrowing and correct it for their current degree of utilization. Assumed equal for all firms.

VA For each firm, its value added for one year. Computed in YEARLY UPDATE.

VATAX Total value added tax for one year. Computed in GOVERNMENT ACCOUNTING.

W For each firm, its average wage for one year. Computed in YEARLY UPDATE. The wage includes any payroll taxes.

WG Average government wage level for one year, including any payroll taxes. Updated in GOVERNMENT ACCOUNTING.

WGREF Government wage level (WG) for a reference year. Used in NATIONAL ACCOUNTING to deflate the public-services component of GNP.

WH Each household's wealth (current value of its bank deposits). Updated in HOUSEHOLD UPDATE.

WHRA Each household's addicted wealth ratio (quotient between bank deposits and quarterly disposable income). Updated in HOUSEHOLD UPDATE.

WSG Total government wage sum for one year. Updated in GOVERNMENT ACCOUNTING.

WTAX Total payroll taxes for one year. Updated in GOVERNMENT ACCOUNTING.

WTIX Working time index in the explicit sectors; assumed equal for all firms. Enters each firm's individual production function QFR.

WW Each firm's wage. A help variable used within LABOUR SEARCH to accommodate market interactions.

X For each firm, its export share (fraction of sold volume). Updated in EXPORT MARKETS.

XIN Export fraction for each external model sector. Assumed to be constant over time.

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