SFC FR Model
A Stock Flow Consistent model for the French economy.

System of equations and simulations

05/04/2022

Jacques Mazier (Université Sorbonne Paris Nord and Chaire Energie et Prospérité)
Luis Reyes (Kedge Business School)

Table of contents
System of equations ...................................................................................................................... 1
   Non-financial corporations ..................................................................................................... 9
   Households and NPISH ....................................................................................................... 11
   Financial institutions ............................................................................................................. 13
      Financial institutions, other than the central bank ......................................................... 14
      Banque de France ............................................................................................................. 16
   Government .......................................................................................................................... 18
   Rest of the world ................................................................................................................... 20
   Prices, wages, employment and interest rates ..................................................................... 22
   Exogenous parameters and variables .................................................................................. 24
   Simulations ............................................................................................................................ 24
   Observed vs simulated ......................................................................................................... 24
   Scenarios ............................................................................................................................... 29

System of equations

Throughout the presentation, terms in bold indicate that the corresponding term is a single variable included in the code. For instance, $pv$ (a value) indicates that $p$ (price) and $v$ (volume) are separate terms, whereas $pv$ is a single value item. When this is done, an additional identity $v = pv/p$ (or alternatively $p = pv/v$) is added to the code. In order to save space, these equations are not shown in the document. In this version, the items belonging to the production account (other than value added) are taken as given, so that the supply side is not modeled. The variables $p_{i_2}^G$, $i_{i_2}^G$, $p_{i_3}^H$ and $i_{i_3}^H$ are exogenous.
Table 1 Symbolic balance sheet structure of economic agents

<table>
<thead>
<tr>
<th>Non-Fin. Corporations</th>
<th>Financial institutions</th>
<th>Government</th>
<th>Households + NPISH</th>
<th>Rest of the world</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Banks</td>
<td>Banque de France</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANF₁</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Produced non-financial assets</td>
<td>$p^F_{K,h}$</td>
<td>$p^L_{K,l}$</td>
<td>$p^G_{K,h}$</td>
<td>$p^R_{K,l}$</td>
</tr>
<tr>
<td>ANF₂</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventories (12) + valuables (13)</td>
<td>$p^F_{K,h}$</td>
<td>$p^L_{K,l}$</td>
<td>$p^G_{K,h}$</td>
<td>$p^R_{K,l}$</td>
</tr>
<tr>
<td>ANF₃</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-produced non-financial assets</td>
<td>$p^F_{K,h}$</td>
<td>$p^L_{K,l}$</td>
<td>$p^G_{K,h}$</td>
<td>$p^R_{K,l}$</td>
</tr>
<tr>
<td>F₁</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monetary gold and SDRs</td>
<td>$p^CB_{CB}$</td>
<td>$p^CB_{CB}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bills and coins</td>
<td>$H^F$</td>
<td>$H^R$</td>
<td></td>
<td>$H^F$</td>
</tr>
<tr>
<td>Refinancing between financial institutions</td>
<td></td>
<td>$RF$</td>
<td></td>
<td>$RF^F$</td>
</tr>
<tr>
<td>Bank reserves</td>
<td>$RES$</td>
<td>$RES$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govt. account at CB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deposits</td>
<td>$D^F_A$</td>
<td>$D^R_A$</td>
<td>$D^G_A$</td>
<td>$D^F_A$</td>
</tr>
<tr>
<td>F₂</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public securities</td>
<td>$p^F_{B,h}$</td>
<td>$p^L_{B,l}$</td>
<td>$p^G_{B,h}$</td>
<td>$p^R_{B,l}$</td>
</tr>
<tr>
<td>Foreign securities</td>
<td>$p^F_{B,h}$</td>
<td>$p^L_{B,l}$</td>
<td>$p^G_{B,h}$</td>
<td>$p^R_{B,l}$</td>
</tr>
<tr>
<td>Other securities</td>
<td>$p^F_{B,h}$</td>
<td>$p^L_{B,l}$</td>
<td>$p^G_{B,h}$</td>
<td>$p^R_{B,l}$</td>
</tr>
<tr>
<td>F₃</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loans</td>
<td>$L^F_A$</td>
<td>$L^R_A$</td>
<td>$L^G_A$</td>
<td>$L^F_A$</td>
</tr>
<tr>
<td>F₄</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Domestic] Equity and inv. fund shares</td>
<td>$p^F_{A,h}$</td>
<td>$p^L_{A,l}$</td>
<td>$p^G_{A,h}$</td>
<td>$p^R_{A,l}$</td>
</tr>
<tr>
<td>[Foreign] Equity and inv. fund shares issued by RoW</td>
<td>$p^F_{A,h}$</td>
<td>$p^L_{A,l}$</td>
<td>$p^G_{A,h}$</td>
<td>$p^R_{A,l}$</td>
</tr>
<tr>
<td>F₅</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance, pension funds and s.g.s.</td>
<td>$A^F_A$</td>
<td>$A^R_A$</td>
<td>$A^G_A$</td>
<td>$A^F_A$</td>
</tr>
<tr>
<td>F₆</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fin. derivatives and employee stock options</td>
<td>$X^F_A$</td>
<td>$X^R_A$</td>
<td>$X^G_A$</td>
<td>$X^F_A$</td>
</tr>
<tr>
<td>F₇</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other accounts receivable/payable</td>
<td>$Z^F$</td>
<td>$Z^R$</td>
<td>$Z^{CB}$</td>
<td>$Z^G$</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial wealth</td>
<td>$FW^F$</td>
<td>$FW^R$</td>
<td>$FW^{CB}$</td>
<td>$FW^G$</td>
</tr>
<tr>
<td>B₉₀</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net worth</td>
<td>$WLT^F$</td>
<td>$WLT^R$</td>
<td>$WLT^{CB}$</td>
<td>$WLT^G$</td>
</tr>
</tbody>
</table>

Closes the column (sector) in flow
Closes the row (instrument) in flow

The unwritten identity is described in Equation 271.

The closure for the government is the sector’s total indebtedness ($p^G_{B,l}B^G_L + L^G_F$), described in Equation 323.
Table 2 Numerical balance sheet structure of economic agents, 2019 % of GDP

| Non-Fin. | Financial Institutions | Government | Households + NPISH | Rest of the world | Total |
| Corporations | Banks | Banque de France | | | |
| ANF1 | Produced non-financial assets | 105.8 | 6.9 | 52.3 | 169.2 | 334.2 |
| ANF1J | Inventories (12) + valuables (13) | 17.5 | | 1.1 | 6.5 | 25.1 |
| ANF1K | Non-produced non-financial assets | 93.7 | 7.4 | 38.6 | 169.3 | 309.0 |
| F1 | Monetary gold and SDRs | | | 4.3 | | 4.3 | 0.0 |
| F2 | Bills and coins | 0.6 | 0.5 | 10.2 | 3.4 | 5.6 | 0.0 |
| | Refinancing between financial institutions | | | -7.9 | 5.0 | | 12.9 | 0.0 |
| | Bank reserves | 22.2 | | 22.2 | | | 0.0 |
| | Govt. account at CB | | | 1.1 | 1.1 | | 0.0 |
| | Target 2 | | | 1.3 | | | 1.3 | 0.0 |
| F3 | Deposits | 28.3 | 97.4 | 207.0 | 7.5 | 6.7 | 6.0 | 5.8 | 64.6 | 63.5 | 47.8 | 0.0 |
| F4 | Public securities | 1.2 | 22.1 | 17.4 | 98.1 | 57.4 | | 0.0 |
| | Foreign securities | 1.6 | 63.3 | 6.5 | 1.1 | 0.8 | 73.3 | 0.0 |
| | Other securities | 27.6 | 42.5 | 67.6 | 5.0 | 1.1 | 0.8 | 45.8 | 0.0 |
| F5 | Loans | 75.2 | 122.5 | 109.7 | 0.2 | 8.3 | 61.3 | 44.8 | 37.7 | 0.0 |
| F6 | [Domestic] Equity and inv. fund shares issued by RoW | 194.0 | 333.3 | 84.6 | 104.1 | 0.7 | 6.1 | 25.1 | 61.0 | 78.1 | 0.0 |
| F7 | [Foreign] Equity and inv. fund shares | 72.9 | 32.8 | 0.1 | -1.2 | 6.2 | 110.8 | 0.0 |
| F8 | Insurance, pension funds and s.g.s. | 1.8 | 92.5 | 0.2 | 89.4 | 1.1 | | 0.0 |
| F9 | Fin. derivatives and employee stock options | 0.0 | 1.7 | 0.0 | -0.1 | 0.0 | -1.8 | 0.0 |
| F10 | Other accounts receivable/payable | 12.8 | -3.1 | 0.0 | 0.5 | 4.4 | -14.7 | 0.0 |
| F | Financial wealth | -95.1 | 7.2 | 1.9 | -78.4 | 169.4 | -4.7 | 668.3 |
| B90 | Net worth | 121.9 | 21.5 | 1.9 | 13.5 | 514.4 | -4.7 | 0.0 |
| A-(L+B90) | | 0 | 0 | 0 | 0 | 0 | 0 |

Source: Authors’ calculations using data from INSEE and Webstat (Banque de France)

Note: The totals are the result of operations carried out with more than one decimal (not shown here), therefore totals in the last line and column may differ slightly.

Table 3 Symbolic uses-resources table + flow of funds

<table>
<thead>
<tr>
<th>Code</th>
<th>Item</th>
<th>Firms</th>
<th>Financial Inst excl Banque de France</th>
<th>Banque de France</th>
<th>Government</th>
<th>Households + NPISH</th>
<th>Rest of the world</th>
<th>Total Uses/Res.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P6</td>
<td>Exports</td>
<td>paid</td>
<td>received</td>
<td>paid</td>
<td>received</td>
<td>paid</td>
<td>received</td>
<td>paid</td>
</tr>
<tr>
<td>P7</td>
<td>Imports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B12</td>
<td>Trade balance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td>Production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>Intermediate consumption</td>
<td>_p_1IC&quot;</td>
<td>_p_1IC&quot;</td>
<td>_p_1IC&quot;</td>
<td>_p_1IC&quot;</td>
<td>_p_1IC&quot;</td>
<td>_p_1IC&quot;</td>
<td>_p_1IC&quot;</td>
</tr>
<tr>
<td>B1</td>
<td>Value added</td>
<td>_V_1A</td>
<td>_V_1A</td>
<td>_V_1A</td>
<td>_V_1A</td>
<td>_V_1A</td>
<td>_V_1A</td>
<td>_V_1A</td>
</tr>
<tr>
<td>D11</td>
<td>Wages and salaries</td>
<td>_W_1</td>
<td>_W_1</td>
<td>_W_1</td>
<td>_W_1</td>
<td>_W_1</td>
<td>_W_1</td>
<td>_W_1</td>
</tr>
<tr>
<td>D12</td>
<td>Labor contributions</td>
<td>_LC_2</td>
<td>_LC_2</td>
<td>_LC_2</td>
<td>_LC_2</td>
<td>_LC_2</td>
<td>_LC_2</td>
<td>_LC_2</td>
</tr>
<tr>
<td>D29</td>
<td>Taxes on payroll and miscellaneous taxes on production</td>
<td>_Σ_1</td>
<td>_Σ_1</td>
<td>_Σ_1</td>
<td>_Σ_1</td>
<td>_Σ_1</td>
<td>_Σ_1</td>
<td>_Σ_1</td>
</tr>
<tr>
<td>D319</td>
<td>Subsidies on production</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
</tr>
<tr>
<td>D39</td>
<td>Other subsidies on production</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
<td>_Sub_1</td>
</tr>
</tbody>
</table>
**Note:** The Central Bank’s financing capacity is nil; it is paid in full to the government in form of a tax (see equations 233, 234 and 282).
Table 4 Numerical uses-resources table + flow of funds, 2019 % of GDP

<table>
<thead>
<tr>
<th>Code</th>
<th>Item</th>
<th>Firms paid</th>
<th>Firms received</th>
<th>Financial inst excl BdF paid</th>
<th>Financial inst excl BdF received</th>
<th>Banque de France paid</th>
<th>Banque de France received</th>
<th>Government paid</th>
<th>Government received</th>
<th>Households + NPISH paid</th>
<th>Households + NPISH received</th>
<th>Rest of the world paid</th>
<th>Rest of the world received</th>
<th>Total (uses - res.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P6</td>
<td>Exports</td>
<td>124.8</td>
<td>10.1</td>
<td>20.9</td>
<td>20.8</td>
<td>1.0</td>
<td>1.0</td>
<td>31.8</td>
<td>31.8</td>
<td>32.8</td>
<td>32.8</td>
<td>1.0</td>
<td>-1.0</td>
<td>176.6</td>
</tr>
<tr>
<td>P7</td>
<td>Imports</td>
<td>72.5</td>
<td>6.2</td>
<td>4.9</td>
<td>4.1</td>
<td>-0.9</td>
<td>0.0</td>
<td>-87.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B11</td>
<td>Trade balance</td>
<td>52.3</td>
<td>3.9</td>
<td>16.0</td>
<td>16.8</td>
<td>88.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td>Production</td>
<td>26.1</td>
<td>1.7</td>
<td>8.2</td>
<td>2.3</td>
<td>39.0</td>
<td>0.7</td>
<td>0.1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>Intermediate consumption</td>
<td>7.3</td>
<td>0.7</td>
<td>4.0</td>
<td>0.8</td>
<td>13.1</td>
<td>0.2</td>
<td>0.0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D11</td>
<td>Wages and salaries</td>
<td>3.0</td>
<td>0.5</td>
<td>0.5</td>
<td>4.8</td>
<td>1.0</td>
<td>0.1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D12</td>
<td>Labor contributions</td>
<td>-1.6</td>
<td>-0.1</td>
<td>-0.1</td>
<td>-0.4</td>
<td>-0.3</td>
<td>-2.4</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D29</td>
<td>Taxes on payrolls and miscellaneous taxes on production</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
<td>2.0</td>
<td>0.2</td>
<td>0.1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D319</td>
<td>Subsidies on production</td>
<td>0.1</td>
<td>2.0</td>
<td>0.1</td>
<td>1.9</td>
<td>0.1</td>
<td>0.1</td>
<td>1.9</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D45</td>
<td>Rents</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D52</td>
<td>Interest</td>
<td>2.6</td>
<td>2.1</td>
<td>4.7</td>
<td>4.7</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D46</td>
<td>Distributed income of corporations</td>
<td>8.3</td>
<td>6.8</td>
<td>1.7</td>
<td>2.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D47</td>
<td>Reinvested earnings on direct foreign investment</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D48</td>
<td>Property income attributed to insurance policy holders</td>
<td>0.1</td>
<td>1.9</td>
<td>0.1</td>
<td>1.9</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D49</td>
<td>Taxes on income and wealth</td>
<td>0.2</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>2.9</td>
<td>2.9</td>
<td>2.9</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D61</td>
<td>Social contributions</td>
<td>0.6</td>
<td>1.5</td>
<td>16.8</td>
<td>19.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D62</td>
<td>Social benefits</td>
<td>0.6</td>
<td>1.5</td>
<td>19.5</td>
<td>21.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D7</td>
<td>Transfers</td>
<td>1.0</td>
<td>4.2</td>
<td>2.7</td>
<td>2.7</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B6</td>
<td>Gross disposable income</td>
<td>12.1</td>
<td>12.1</td>
<td>0.8</td>
<td>0.8</td>
<td>24.3</td>
<td>24.3</td>
<td>24.3</td>
<td>62.9</td>
<td>62.9</td>
<td>100.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P3</td>
<td>Consumption</td>
<td>23.1</td>
<td>53.7</td>
<td>76.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B8</td>
<td>Gross saving</td>
<td>12.1</td>
<td>12.1</td>
<td>9.2</td>
<td>9.2</td>
<td>23.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D9</td>
<td>Capital transfers</td>
<td>0.8</td>
<td>0.1</td>
<td>0.4</td>
<td>0.5</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P51</td>
<td>Gross Fixed Capital Formation</td>
<td>12.8</td>
<td>1.2</td>
<td>3.7</td>
<td>5.8</td>
<td>23.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P52</td>
<td>Changes in inventories</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P53</td>
<td>Acquisition less disposals of valuables</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NP</td>
<td>Acquisitions less disposals of non-fin non-produced assets</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B9N</td>
<td>Net financing capacity</td>
<td>-0.1</td>
<td>-0.5</td>
<td>-0.6</td>
<td>-0.1</td>
<td>-0.2</td>
<td>-0.3</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj</td>
<td>Adjustment B9F - B9NF</td>
<td>-0.1</td>
<td>0.5</td>
<td>-0.4</td>
<td>-0.1</td>
<td>-0.2</td>
<td>-0.3</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow</th>
<th>Instrument</th>
<th>Firms asset</th>
<th>Firms liability</th>
<th>Financial inst excl BdF asset</th>
<th>Financial inst excl BdF liability</th>
<th>Banque de France asset</th>
<th>Banque de France liability</th>
<th>Government asset</th>
<th>Government liability</th>
<th>Households + NPISH asset</th>
<th>Households + NPISH liability</th>
<th>Rest of the world asset</th>
<th>Rest of the world liability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Monetary gold and SDRs</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F22</td>
<td>Bills and coins</td>
<td>0.1</td>
<td>0.0</td>
<td>-1.9</td>
<td>0.6</td>
<td>0.3</td>
<td>0.2</td>
<td>1.3</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F29S</td>
<td>Refinancing between F1 res</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The value of GDP can be obtained from the table above;

- By the **demand approach** as the sum of public and personal consumption (76.8), gross fixed capital formation by all sectors (23.7), changes in inventories except those of households (0.5-0.1), acquisition less disposals of valuables (0.1) and exports (31.8), less imports (32.8).
- By the **income approach** as the sum of wages and salaries received by households (39.0) the corresponding labor contributions (13.1), the sum of all sectors’ gross operating surplus (34.9), taxes on income and wealth received by the government (13.1) and a slight discrepancy (-0.1).
- By the **production approach** as total value added (88.9), net taxes on production (12.0) less subsidies on production (-1.0).

### Table 5: Symbolic Revaluations Table

<table>
<thead>
<tr>
<th>Flow</th>
<th>Instrument</th>
<th>Financial Inst excl Bdl</th>
<th>Banque de France</th>
<th>Government</th>
<th>Households + NPSH</th>
<th>Rest of the world</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFA1</td>
<td>Produced</td>
<td>$K_s^T\cdot\Delta p_s^T$</td>
<td>$K_s^F\cdot\Delta p_s^F$</td>
<td>$K_s^G\cdot\Delta p_s^G$</td>
<td>$K_s^H\cdot\Delta p_s^H$</td>
<td>$K_s^{NPSH}\cdot\Delta p_s^{NPSH}$</td>
<td>$K_s^{Total}\cdot\Delta p_s^{Total}$</td>
</tr>
<tr>
<td>NFA2</td>
<td>Non-produced</td>
<td>$K_s^T\cdot\Delta p_s^T$</td>
<td>$K_s^F\cdot\Delta p_s^F$</td>
<td>$K_s^G\cdot\Delta p_s^G$</td>
<td>$K_s^H\cdot\Delta p_s^H$</td>
<td>$K_s^{NPSH}\cdot\Delta p_s^{NPSH}$</td>
<td>$K_s^{Total}\cdot\Delta p_s^{Total}$</td>
</tr>
</tbody>
</table>

### Financial Inst excl Bdl

- **F1**: Monetary gold and SDRs
  - **F2**: Deposits
    - **F3e**: Public securities
      - **F3d**: Foreign securities
        - **F3g**: Other securities
          - **F4**: Loans
            - **F5e**: Domestic equity and investment fund shares
              - **F5d**: Foreign equity and investment fund shares insurance, pension funds and s.g.s.
                - **F6**: Financial derivatives and employee stock options
                  - **F7**: Other accounts receivable/payable

### Net financial revaluations

- **NFR**
- **NFR^T**
- **NFR^F**
- **NFR^G**
- **NFR^H**
- **NFR^NPSH**

### Net worth revaluations

- **NWR**
- **NWR^T**
- **NWR^F**
- **NWR^G**
- **NWR^H**
- **NWR^NPSH**

### A-(1+NWR)

0 0 0 0 0 0 0
### Table 6 Numerical revaluations table, 2019 % of GDP

<table>
<thead>
<tr>
<th>Flow</th>
<th>Firms</th>
<th>Financial inst excl Bdf</th>
<th>Banque de France</th>
<th>Government</th>
<th>Households + NPISH</th>
<th>Rest of the world</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFA1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Produced</td>
<td>1.5</td>
<td>0.1</td>
<td>1.2</td>
<td>1.8</td>
<td></td>
<td>4.7</td>
</tr>
<tr>
<td>NFA12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventories</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>NFA13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valuables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.1</td>
<td>-0.1</td>
</tr>
<tr>
<td>NFA2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-produced</td>
<td>3.8</td>
<td>0.3</td>
<td>2.2</td>
<td>7.6</td>
<td></td>
<td>13.8</td>
</tr>
<tr>
<td>F1 Monetary gold and SDRs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2 Deposits</td>
<td>0.0</td>
<td>0.4</td>
<td>-0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>F3a Public securities</td>
<td>0.0</td>
<td>0.1</td>
<td>0.5</td>
<td>2.6</td>
<td>2.0</td>
<td>0</td>
</tr>
<tr>
<td>F3d Foreign securities</td>
<td>0.0</td>
<td>2.2</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>2.6</td>
</tr>
<tr>
<td>F3g Other securities</td>
<td>1.3</td>
<td>0.3</td>
<td>1.2</td>
<td>0.2</td>
<td>0.0</td>
<td>2.0</td>
</tr>
<tr>
<td>F4 Loans</td>
<td>0.1</td>
<td>0.1</td>
<td>-0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.3</td>
</tr>
<tr>
<td>F5a Domestic equity and</td>
<td>30.5</td>
<td>47.7</td>
<td>6.8</td>
<td>9.6</td>
<td>2.2</td>
<td>7.6</td>
</tr>
<tr>
<td>investment fund shares</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11.0</td>
<td></td>
</tr>
<tr>
<td>F5d Foreign equity and</td>
<td>10.9</td>
<td>4.2</td>
<td>0.0</td>
<td>9.1</td>
<td>0.1</td>
<td>0.6</td>
</tr>
<tr>
<td>investment fund shares</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15.7</td>
<td></td>
</tr>
<tr>
<td>F6 Insurance, pension funds</td>
<td>0.0</td>
<td>5.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>and s.g.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F7 Fin. derivatives and</td>
<td>0.0</td>
<td>1.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>-1.0</td>
</tr>
<tr>
<td>employee stock options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Net financial revaluations

<table>
<thead>
<tr>
<th></th>
<th>Firms</th>
<th>Financial inst excl Bdf</th>
<th>Banque de France</th>
<th>Government</th>
<th>Households + NPISH</th>
<th>Rest of the world</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net financial</td>
<td>-7.6</td>
<td>-3.4</td>
<td>0.7</td>
<td>-0.3</td>
<td>13.2</td>
<td>-2.8</td>
</tr>
<tr>
<td>revaluations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net worth revaluations</td>
<td>-2.0</td>
<td>-3.0</td>
<td>0.7</td>
<td>3.1</td>
<td>22.5</td>
<td>-2.8</td>
</tr>
<tr>
<td>A (L+NWRF)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Table 7 Symbolic other changes in volume table

<table>
<thead>
<tr>
<th>Flow</th>
<th>Firms</th>
<th>Financial inst excl Bdf</th>
<th>Banque de France</th>
<th>Government</th>
<th>Households + NPISH</th>
<th>Rest of the world</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFA1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Produced</td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
<td>OCVs7</td>
<td>OCVs8</td>
</tr>
<tr>
<td>NFA12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventories + valuables</td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
<td>OCVs7</td>
<td>OCVs8</td>
</tr>
<tr>
<td>NFA2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-produced</td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
<td>OCVs7</td>
<td>OCVs8</td>
</tr>
<tr>
<td>F295 Refinancing between F1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>res Bank reserves</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>F2 Deposits</td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
<td>OCVs7</td>
<td>OCVs8</td>
</tr>
<tr>
<td>F3a Public securities</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>F3d Foreign securities</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>F3g Other securities</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>F4 Loans</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>F5a Domestic equity and</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>investment fund shares</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>F5d Foreign equity and</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>investment fund shares</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>F6 Insurance, pension funds</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>and s.g.</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>F7 Fin. derivatives and</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
<tr>
<td>employee stock options</td>
<td></td>
<td></td>
<td>OCVs1</td>
<td>OCVs3</td>
<td>OCVs4</td>
<td>OCVs5</td>
<td>OCVs6</td>
</tr>
</tbody>
</table>

#### Net financial other changes in volume

<table>
<thead>
<tr>
<th></th>
<th>Firms</th>
<th>Financial inst excl Bdf</th>
<th>Banque de France</th>
<th>Government</th>
<th>Households + NPISH</th>
<th>Rest of the world</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net financial</td>
<td>FOCVs</td>
<td>FOCVs</td>
<td>FOCVs</td>
<td>FOCVs</td>
<td>FOCVs</td>
<td>FOCVs</td>
<td>FOCVs</td>
</tr>
<tr>
<td>other changes in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>volume</td>
<td>OCVs</td>
<td>OCVs</td>
<td>OCVs</td>
<td>OCVs</td>
<td>OCVs</td>
<td>OCVs</td>
<td>OCVs</td>
</tr>
</tbody>
</table>
### Table 8 Numerical other changes in volume table, 2019 % of GDP

<table>
<thead>
<tr>
<th></th>
<th>Flow</th>
<th>Instrument</th>
<th>Asset Liability</th>
<th>Financial inst excl BU</th>
<th>Banque de France</th>
<th>Government</th>
<th>Households + NPISH</th>
<th>Rest of the world</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NFA1</td>
<td>Produced</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>NFA2</td>
<td>Non-produced</td>
<td>2.3</td>
<td>0.4</td>
<td>0.5</td>
<td>2.5</td>
<td>5.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F205</td>
<td></td>
<td>Refinancing between FI</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bank reserves</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Govt acc at the CB</td>
<td>2.2</td>
<td>2.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deposits</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public securities</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foreign securities</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other securities</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loans</td>
<td>-0.2</td>
<td>-0.4</td>
<td>-1.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>-0.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic equity and investment fund shares</td>
<td>0.4</td>
<td>0.3</td>
<td>-0.2</td>
<td>-0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foreign equity and investment fund shares</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insurance, pension funds and s.g.s.</td>
<td>0.1</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fin. derivatives and employee stack options</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Net financial other changes in volume</td>
<td>0.5</td>
<td>-1.8</td>
<td>0.0</td>
<td>0.2</td>
<td>0.0</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Net other changes in volume</td>
<td>2.8</td>
<td>-1.3</td>
<td>0.0</td>
<td>0.7</td>
<td>2.5</td>
<td>1.0</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Note: some rows that exhibit 0 in 2019 are not shown in the tables.

#### Equation 1 GDP in volume

\[
Y = \frac{C^H + C^G}{\text{Consumption}} + \frac{\text{Gross Fixed Capital Formation}}{\text{GFCF}} + \frac{\text{Trade balance}}{X - IM} - T + T^p + Sub + Sub^P
\]

#### Equation 2 Value added, value

\[
VA = p_YY - T + T^p + Sub + Sub^P
\]

[Reminder: Sub and Sub^P appear with a negative sign in Table 4, therefore in the code they appear with a negative sign, and in the previous formula with a positive one.]

#### Equation 3 Consumer price index

\[
\]

[Reminder: Sub and Sub^P appear with a negative sign in Table 4, therefore in the code they appear with a negative sign, and in the previous formula with a positive one.]

#### Equation 4 Value added, firms

\[
VA^F = VA - VA^B - VA^C - VA^H
\]

#### Equation 5 Value added, households

\[
VA^H = a^H (VA - VA^B - VA^C)
\]

#### Equation 6 Value added, banks

\[
VA^B = a^B (VA - VA^B - VA^C)
\]

#### Equation 7 Value added, public sector

\[
VA^P = a^P (VA - VA^B - VA^C)
\]

#### Equation 8 Value added, volume

\[
u = \frac{VA}{p_Y}
\]

#### Equation 9 Value added, market sector (value)

\[
VA^M = VA^F + VA^B + VA^H
\]

#### Equation 10 Value added market sector, volume
\[ νA^M = \left( \frac{VA^M}{\nuF} \right) \]

**Non-financial corporations**

**Equation 11 Wages paid**
\[ W_p^F = w_p^F N_p^F \]

**Equation 12 Labor contributions paid**
\[ LC_p^F = β_C W_p^F \]

**Equation 13 Labor taxes**
\[ T_p^F = β_T W_p^F \]

**Equation 14 Subsidies received**
\[ Sub_p^F \text{ exogenous} \]

**Equation 15 Profits**
\[ NI^F = VA^F - W_p^F - LC_p^F - T_p^F - Sub_p^F \]

**Equation 16 Interests received**
\[ Int_p^F = r_p^F(D_{L-1}^F + p_{E-1}^F B_{A-1}^F + \gamma E_{A-1}^F + L_{L-1}^F) \]

**Equation 17 Interests paid**
\[ Int_p^F = r_p^F(p_{E-1}^F B_{L-1}^F + L_{L-1}^F) \]

**Equation 18 Dividends paid**
\[ Div_p^F = Y_{div}^F NI^F \]

**Equation 19 Dividends received**
\[ Div_p^F = Y_{div}^F p_{E-1}^F E_{A-1}^F \]

**Equation 20 Redistribution earnings paid to FDI received**
\[ RFDI_p^F = RFDI_p^F + RFDI_p^F + RFDI_p^F - RFDI_p^F - RFDI_p^F \]

**Equation 21 Redistribution earnings paid to FDI paid**
\[ RFDI_p^F = Y_{div}^F p_{E-1}^F E_{A-1}^F \]

**Equation 22 Property income attributed to insurance policy holders received**
\[ INS_p^F = r_p^F A^F_{E-1} \]

**Equation 23 Rents paid**
\[ RENT_p^F = rent_p^F VA^F \]

**Equation 24 Corporate taxes**
\[ T^F = θ_T (NI^F + Int_p^F - Int_p^F - Div_p^F + RFDI_p^F - RFDI_p^F - RFDI_p^F - RFDI_p^F - INS_p^F - RENT_p^F) \]

**Equation 25 Social benefits paid**
\[ SB_p^F = γ_p^F p_Y Y \]

**Equation 26 Social contributions received**
\[ SC_p^F = θ_p^F (SC_p^F + SC_p^F) \]

**Equation 27 Miscellaneous transfers paid**
\[ Tr_p^F = θ_{Tr}^F p_Y Y \]

**Equation 28 Disposable (corporate) income**
\[ Y_p^F = NI^F + Int_p^F - Int_p^F + Div_p^F + RFDI_p^F - RFDI_p^F + INS_p^F - RENT_p^F + T_p^F + SC_p^F - SB_p^F - Tr_p^F \]

**Equation 29 Savings (self-financing)**
\[ S^F = Y_p^F \]

**Equation 30 Net acquisition of non-financial non-produced assets**
\[ NP^F = θ_{NP}^F p_Y Y \]

**Equation 31 Capital transfers**
\[ Tr^F = θ_{Tr}^F p_Y Y \]

**Equation 32 Financing capacity/need**
\[ FCN^F = S^F - p_{I1}^F t_{I1}^F - p_{I2}^F t_{I2}^F - NP^F + Tr_k^F \]

**Equation 33 Gross investment**
\[ I_k^F = ΔK_k^F + δ_k^F K_k^F \]

**Equation 34 Net produced non-financial assets, flow (accumulation rate) → model runs with option 1**

**Option 1, without output gap**
\[ \left( \frac{ΔK_k^F}{K_k^F} \right) = 0.02 + 0.1 \left( \frac{NI_{k-1}^F - Int_{k-1}^F}{p_{k-1}^F K_{k-1}^F + p_{k-2}^F K_{k-2}^F} \right) - 0.1(r_p^F - π) - 0.02(r_p^F - π) - 0.02 \left( \frac{L_k^F}{p_{k-1}^F E_k^F + WLT_k^F} \right) \]

**Option 2, with output gap**
\[ \left( \frac{ΔK_k^F}{K_k^F} \right) = 0.03 - 0.06(r_p^F - π) - 0.02 \left( \frac{L_k^F}{p_{k-1}^F E_k^F + WLT_k^F} \right) + 0.3 GAP \]

**Equation 35 Gross investment, price**
\[ Δ ln(p_{t}^F) = 0.96A ln(p_{t}) \]

**Equation 36 Produced non-financial assets, price**
\[ p_{k}^F = θ_{p}^F p_{t}^F \]

**Equation 37 Non-financial assets, stock**
\[ p_{k}^F K_k^F = (1 - δ_{k}^F) p_{k-1}^F K_{k-1}^F + p_{k}^F t_{k}^F + K_{k-1}^F Δp_{k-1}^F + OCV_{k}^F \]

**Equation 38 Inventories, price**
\[ Δ ln(p_{t}) = 0.3 Δ ln(p_{t+1}) + 0.6 Δ ln(p_{t+2}) \]

**Equation 39 Inventories, stock**
\[ Δ ln(K_{t+1}^{I}) = -0.01 + 0.8Δ ln(K_{t-1}^{I}) + 1.2Δ ln(va_{t}^F) - 0.6Δ ln(\nu_{t-1}^F) \]

**Equation 40 Value added by firms, volume**
\[ va^F = \left( \frac{VA^F}{\nuF} \right) \]
\[ p^{\text{int}}_{12} = \delta(p_{K_{11}} K_{12}^f) - K_{12}^f \Delta p_{K_{11}} - OCV_{K_{11}}^f \]

Equation 41 Inventories, flow

\[ \ln(p_{K_{11}}^f) = 0.86 \ln(p_{K_{11}}^f) + 0.8 \ln(p_{K_{12}}^f) - 0.7 \ln(p_{K_{12}}^f) \]

Equation 42 Non-produced non-financial assets, price

\[ p_{K_{11}}^f K_{12}^f = p_{K_{11}} K_{12}^f + p_{K_{21}}^f I_{12}^f + K_{12}^f \Delta p_{K_{11}} + OCV_{K_{11}}^f \]

Equation 43 Non-produced non-financial assets, stock (mainly constructible land)

\[ I_{12}^f \text{ exogenous (close to nil)} \]

Equation 44 Non-produced non-financial assets, flow

\[ p_{K_{11}}^f \text{ Freehold, stock} \]

Equation 45 Public securities held, stock

\[ \Delta B^f_a = \Delta B^f_a - \frac{OCV_{K_{11}}^f}{p_{K_{11}}^f} \]

Equation 46 Public securities held, stock

\[ \Delta B^f_a = \Delta B^f_a - \frac{OCV_{K_{11}}^f}{p_{K_{11}}^f} \]

Equation 47 Public securities held, price

\[ p_{K_{11}}^f = \psi_{pK_{11}} p_{K_{11}}^f \]

Equation 48 Foreign securities held, stock

\[ p_{K_{11}}^f p_{K_{11}}^f = \psi_{pK_{11}} p_{K_{11}}^f \]

Equation 49 Foreign securities held, stock

\[ \Delta B^f_a = \Delta B^f_a - \frac{OCV_{K_{11}}^f}{p_{K_{11}}^f} \]

Equation 50 Foreign securities held, price

\[ p_{K_{11}}^f = \psi_{pK_{11}} p_{K_{11}}^f \]

Equation 51 Equities held, flow (accumulation rate)

\[ \left( \frac{\Delta E^f_a}{E_{a-1}} \right) = 0.35 \left( \frac{1}{p_{K_{11}} K_{11}^{f-1} + p_{K_{12}} K_{12}^{f-1} + p_{K_{11}} K_{11}^{f-1}} \right) + 0.02 \left( \frac{E_{a-1} - \nu_{b_{a-1}}} {p_{K_{11}} E_{a-1} + \nu_{b_{a-1}}} \right) + 0.01 \left( \frac{1}{p_{K_{11}} E_{a-1} + WTL^f} \right) \]

Equation 52 Equities held, price (i.e. CAC 40)

\[ p_{K_{11}}^f = p_{K_{11}}^f \left( \frac{p_{K_{11}}^f E_{a-1}^f}{p_{K_{11}}^f E_{a-1}^f} \right) + p_{K_{11}}^f \left( \frac{p_{K_{11}}^f E_{a-1}^f}{p_{K_{11}}^f E_{a-1}^f} \right) \]

Equation 53 Equities held, stock

\[ E_{a}^f = E_{a-1}^f + \Delta E_{a}^f + \left( \frac{OCV}{p_{K_{11}}^f} \right) \]

Equation 54 Domestic equities held, stock

\[ p_{K_{12}}^f = \psi_{pK_{12}}^f p_{K_{12}}^f \]

Equation 55 Domestic equities held, price

\[ p_{K_{12}}^f = \eta_{pK_{12}}^f p_{K_{12}}^f \]

Equation 56 Domestic equities held, flow

\[ \Delta E_{a}^f = \Delta E_{a}^f - \frac{OCV_{K_{12}}^f}{p_{K_{12}}^f} \]

Equation 57 Foreign equities held, stock

\[ p_{K_{12}}^f E_{a}^f = p_{K_{12}}^f E_{a}^f - \frac{OCV_{K_{12}}^f}{p_{K_{12}}^f} \]

Equation 58 Foreign equities held, flow

\[ \Delta E_{a}^f = \Delta E_{a}^f - \frac{OCV_{K_{12}}^f}{p_{K_{12}}^f} \]

Equation 59 Foreign equities held, price

\[ \Delta \ln(p_{K_{12}}^f) = -0.6 \Delta \ln(p_{K_{12}}^f) + 1.1 \Delta \ln(p_{K_{12}}^f) \]

Equation 60 Profitability of equities held

\[ r_{K_{12}}^f = \left( \frac{E_{a-1} - \Delta p_{K_{12}}^f + D\nu_{b_{a-1}}}{p_{K_{12}}^f E_{a-1}} \right) \]

Equation 61 Deposits, stock

\[ \Delta \left( \frac{D^f_a}{p_{K_{12}}^f} \right) = 0.009 + 0.4 \Delta \left( \frac{D^f_{a-1}}{p_{K_{12}}^f Y_{a-1}} \right) - 0.14 (10\%rr - \tau_{r}) \]

Equation 62 Deposits, flow

\[ \Delta D^f_a = \Delta D^f_a - \text{reval} \]

Equation 63 Credit assets, flow

\[ \left( \Delta L_{a}^f / VA^f \right) = 0.5 \left( \Delta L_{a-1}^f / VA_{a-1}^f \right) + 0.5 \left( \Delta L_{a-1}^f / VA_{a-1}^f \right) - 0.3 \left( \Delta L_{a-1}^f / VA_{a-1}^f \right) \]

Equation 64 Credit assets, stock

\[ L_{a}^f = L_{a-1}^f + \Delta L_{a}^f + \text{reval} \]

Equation 65 Bills and coins, stock

\[ H^f = \psi_{pH^f} p_{K_{12}}^f \]

Equation 66 Bills and coins, flow

\[ \Delta H^f = \Delta H^f - \text{OCV}_{H^f} \]

Equation 67 Insurance, pension funds and standardized guarantee schemes, flow

\[ \Delta A^f_a = \psi_{pA^f}^f V^f \]

Equation 68 Insurance, pension funds and standardized guarantee schemes, stock

\[ A^f_a = A^f_{a-1} + \Delta A^f_a + OCV^f_a \]

Equation 69 Total indebtedness, stock

\[ \Delta \left( \frac{p_{K_{12}}^f B^f_{a}}{p_{K_{12}}^f + p_{K_{12}}^f + p_{K_{2}}^f K_{12}^f} \right) \]

\[ = 0.3 \Delta \left( \frac{p_{K_{11}}^f K_{11}^{f-1} + p_{K_{12}}^f K_{12}^{f-1} + p_{K_{12}}^f K_{12}^{f-1}}{p_{K_{12}}^f + B_{12}^f K_{12}^{f-1}} \right) + 1.8 \Delta \left( \frac{p_{K_{11}}^f K_{11}^{f-2} + p_{K_{12}}^f K_{12}^{f-2} + p_{K_{12}}^f K_{12}^{f-2}}{p_{K_{12}}^f + B_{12}^f K_{12}^{f-2}} - 0.07 \nu_{c_{a-1}} \right) \]
\[\nu_c = \left( p_{km}^f - \frac{p_{km}^f B_L^f}{p_{Bl1}^f} \right) - 7.7 \left( \frac{p_{km}^f K_4^f + p_{km}^f K_2^f + p_{km}^f K_4^f}{p_{Bl1}^f} \right) + 3.2 (\text{yoyears} - \pi Y)\]

Equation 70 Total indebtedness, flow

\[\Delta B_L^f = \Delta B_L^f - \left( \frac{OCV^{f}_{L,L1}}{p_{Bl1}^f} \right)\]

Equation 71 Bonds issued, stock

\[\left( \frac{p_{km}^f B_L^f}{p_{Bl1}^f} \right) = 0.9 \left( \frac{p_{km}^f B_L^f}{p_{Bl1}^f, B_L^f - 1} \right) + 0.002 \ln(p_{km}^f)\]

Equation 72 Total indebtedness, price

\[\Delta \ln(p_{km}^f) = 0.4 \Delta \ln(p_{km}^f) + 0.134 \Delta \ln(p_{km}^f) - 0.09 \Delta \ln(p_{km}^f) - 0.05 \nu_c \]

\[\nu_c = \ln(p_{km}^f) - 0.02 - 0.2 \ln(p_{km}^f)\]

Equation 73 Bonds issued, flow

\[\Delta B_L^f = \Delta B_L^f - \left( \frac{OCV^{f}_{L,L1}}{p_{Bl1}^f} \right)\]

Equation 75 Loans issued, flow

\[\Delta L_C^f = p_{km}^f \Delta B_L^f - p_{km}^f \Delta B_L^f\]

Equation 76 Loans issued, stock

\[L_C^f = L_C^f - \Delta L_C^f + \text{revbal}'_C + OCV'_{L_C}\]

Equation 77 Other accounts payable/receivable, stock (net assets)

\[Z^f = \theta_{km}^f p_\nu Y\]

Equation 78 Other accounts payable/receivable, flow (net assets)

\[\Delta Z^f = \Delta Z^f - OCV^{f}_{L,L1}\]

Equation 79 Equities issued, flow, closes account of non-financial corporations

\[p_{km}^f \Delta E_L^f = p_{km}^f L_C^f + p_{km}^f L_C^f + \Delta H^f + \Delta D^f + p_{km}^f \Delta B_A^f + \Delta X^f + p_{km}^f \Delta E_A^f + \Delta A_C^f + \Delta \nu C^f + \Delta \nu Y^f + N P^f - T R^f + Ad^f\]

Equation 80 Equities issued, price

\[p_{km}^f = \theta_{km}^f p_\nu Y\]

Equation 81 Equities issued, stock

\[E_L^f = E_L^f - \Delta E_L^f + \left( \frac{OCV^{f}_{L,L1}}{p_{Bl1}^f} \right)\]

Equation 82 Profitability of equities issued

\[r_{L}^f = \left( \frac{E_L^f - \Delta E_L^f + DC_{L}^f}{p_{Bl1}^f, E_{L1}^f - 1} \right)\]

Equation 83 Price of domestic equity (the simulations shown are with \(v_1\))

\[\Delta \ln(p_{km}^f) = 0.9 \Delta \ln(p_{km}^f) - 0.4 \Delta \ln(p_{km}^f) - 0.5 \nu_c\]

\[\nu_c = \ln(p_{km}^f) + 0.02 - 0.2 \ln(p_{km}^f)\]

Equation 84 Domestic equities held by the rest of the world (at constant prices)

\[E_{km}^f = \left( \frac{p_{km}^f E_{L}^f}{p_{km}^f E_{L}^f} \right)\]

Equation 85 Profitability of domestic equities

\[r_{L}^f = \left( \frac{OCV_{L,L1}}{p_{Bl1}^f, E_{L1}^f - 1} \right)\]

Equation 86 Financial wealth

\[FW^f = H^f + D^f + p_{km}^f E_A^f + p_{km}^f E_A^f + p_{km}^f E_A^f + A_C^f + X^f + Z^f - p_{km}^f B_A^f - L_C^f - p_{km}^f B_L^f\]

Equation 87 Net wealth

\[WLTH^f = p_{km}^f K_C^f + p_{km}^f K_C^f + p_{km}^f K_C^f + FW^f\]

Households and NPISH

Equation 88 Wages paid by households

\[W_{m}^h = W^f - W_p^f - W_p^f\]

Equation 89 Total wages received

\[W_{m}^h = W^f + W_p^f - W_p^f\]

Equation 90 Labor contributions paid by individual entrepreneurs

\[LC_{m}^h = \beta_{m}^h W_{m}^h\]

Equation 91 Labor contributions received

\[LC_{m}^h = \sum_i LC_{m}^h - LC_{m}^h \text{ for } i = F, B, G, H, R\]

Equation 92 Labor taxes paid

\[T_L^h = \beta_{m}^h W_{m}^h\]

Equation 93 Subsidies received

\[Sub_{m}^h = \beta_{m}^h p_\nu Y\]

[Operating surplus of individual entrepreneurs \(\rightarrow \Pi^h = VA^h - W_p^f + LC^h - T_L^h + Sub_{m}^h\)]
Equation 94 Interests received
\[ \text{Int}_t^H = r_t^H (D_t^H + p_t^H a_{-1} b_t^H + p_t^H a_{-1} b_t^H) \]

Equation 95 Interests paid
\[ \text{Int}_t^H = r_t^H l_{t-1}^H \]

Equation 96 Dividends received
\[ \text{Div}_t^H = y_t^H d_{t-1}^H E_t^H \]

Equation 97 Property income attributed to insurance policy holders received
\[ \text{INS}_t^H = r_t^H a_{t-1}^H \]

Equation 98 Rents paid
\[ R_{P} = R_{P}^2 + R_{P}^3 - R_{T}^P \]

Equation 99 Rents received
\[ R_{T}^P = rent^P p_{k-1}^H \]

Equation 100 Income tax paid
\[ T^H = \theta^P (VA_{t-1}^H + w_{t-1}^H - w_{t-1}^H + L C_{t-1}^H - L C_{t-1}^H + \text{Int}_{t-1}^H - \text{Int}_{t-1}^H - \text{Div}_{t-1}^H + \text{INS}_{t-1}^H - \text{REN}_t^H) \]

Equation 101 Social contributions paid by workers
\[ L C W_t^H = \theta^P W_t^H \]

Equation 102 Social contributions paid
\[ S C_t^H = L C_t^H + L C W_t^H \]

Equation 103 Social benefits received
\[ S B_t^H = \theta^P p_t^Y \]

Equation 104 Social benefits paid
\[ S B_t^H = \theta^P p_t^Y \]

Equation 105 Miscellaneous transfers received (net)
\[ T_{P}^H = T_{P}^H + T_{P}^H + T_{P}^H - T_{P}^H \]

Equation 106 Disposable income
\[ Y_t^H = VA_t^H - W_t^H - L C_t^H - T_t^H + S u b_t^H + \text{Int}_t^H - \text{Int}_t^H + \text{Div}_t^H + \text{INS}_t^H - \text{REN}_t^H + W_t^H + L C_t^H - T_t^H - S C_t^H + S B_t^H + T_{P}^H \]

Equation 107 Personal consumption (volume)
\[ \Delta \ln (C^H) = 0.6 \Delta \ln \left( \frac{Y_t^H}{p_t^C} \right) + 0.09 \Delta \ln \left( \frac{W T L H_t^H}{p_t^C} \right) - 0.14 \Delta \ln \left( \frac{W T L H_t^H}{p_t^C} \right) \]
\[ \nu c = \ln (C^H) - 0.5 - 0.86 \ln \left( \frac{Y_t^H}{p_t^C} \right) - 0.04 \ln \left( \frac{W T L H_t^H}{p_t^C} \right) \]

Equation 108 Savings
\[ S_t^H = Y_t^H - p_t^H C^H \]

Equation 109 Net acquisition of non-financial non-produced assets
\[ N P_t^H = \theta^P p_t^Y \]

Equation 110 Capital transfers paid
\[ T_{P}^H = \theta^P p_t^Y \]

Equation 111 Financing capacity/need
\[ FCN_t^H = S_t^H - p_t^H T_{P}^H - p_t^H T_{P}^H - p_t^H T_{P}^H - N P_t^H - T_{P}^H \]

Equation 112 Investment
\[ \Delta \ln (I_t^P) = 0.4 \Delta \ln (I_{t-1}^P) + 0.4 \Delta \ln \left( \frac{Y_t^H}{p_t^P} \right) - 0.6 \Delta \left( \iota_{0,years} - \pi_t^P \right) \]
\[ \nu c = \ln (I_t^P) - 1.05 \ln \left( \frac{Y_t^H}{p_t^P} \right) + 0.9 \left( \iota_{0,years} - \pi_t^P \right) \]
\[ - 0.2 \left( \frac{\Delta p_t^H}{p_t^H} \right) \]

Equation 113 Investment, price
\[ \Delta \ln (p_t^P) = 0.98 \Delta \ln (p_t^P) \]

Equation 114 Produced non-financial assets, price
\[ \Delta \ln (p_{t,1}^R) = 0.003 + 0.8 \Delta \ln (p_{t-1,1}^R) + 0.76 \Delta \ln (p_t^P) \]
\[ - 0.72 \Delta \ln (p_{t-1}) \]

Equation 115 Produced non-financial assets, stock (including housing investment)
\[ p_{t,1}^R K_t^H = (1 - \delta^M_k) p_{t-1,1}^R K_{t-1}^H + p_{t,1}^R T_{P,1}^H + K_{t-1}^H \Delta p_t^H + O C V_{t,1}^H \]

Equation 116 Non-producible non-financial assets, price
\[ \Delta \ln (p_{t,5}^R) = 0.61 \Delta \ln (p_{t,5}^R) + 0.9 \Delta \ln (I_t^P) - 0.15 \Delta \ln (I_{t-1}^P) \]
\[ \nu c = \ln (p_{t,5}^R) + 9.5 - 2.1 \ln (I_{t-1}^P) - 1.5 \ln \left( \frac{L_t^C}{p_t^C} \right) \]

Equation 117 Non-producible non-financial assets, stock (mainly constructible land)
\[ p_{t,5}^R K_t^H = p_{t,5}^R K_{t-1}^H + p_{t,5}^R T_{P,5}^H + K_{t-1}^H \Delta p_t^H + O C V_{t,5}^H \]

Equation 118 Bills and coins, stock
\[ H_t^H = \psi^H Y_t^H d_t^H \]

Equation 119 Bills and coins, flow
\[ \Delta H_t^H = H_t^H - O C V_{t,5}^H \]

Equation 120 Deposits, stock (main savings accounts)
\[ \Delta \left( \frac{D_t^H}{p_t^C} \right) = 0.5 \Delta \left( \frac{D_{t-1}^H}{p_{t-1}^C} \right) - 0.4 \Delta (I_{t,0,years} - \pi_t^H) - 0.22 \Delta \ln \left( \frac{L_t^C}{p_t^C} \right) \]
\[ \nu c = \left( \frac{D_t^H}{p_t^C} \right) - 0.9 + 1.04 (I_{t,0,years} - \pi_t^H) \]

Equation 121 Deposits, flow
\[ \Delta D_t^H = \Delta D_t^H - \text{real} \Delta D_t^H - O C V_{t,5}^H \]

Equation 122 Foreign securities held by households, stock
Equation 123 Foreign securities held by households, price

\[ p_{E_h}^{E_h} = \psi_{E_h} p_{E_h} \]

Equation 124 Foreign securities held by households, flow

\[ \Delta^* B_{A}^{E} = \Delta B_{A}^{E} = \left( \frac{OCV_{E_h}^{E_h}}{p_{E_h}} \right) \]

Equation 125 Other securities held by households, stock

\[ p_{E_h}^{B_h} B_{A}^{B} = \psi_{E_h}^{B_h} Y_{A}^{B} \]

Equation 126 Other securities held by households, price

\[ p_{E_h}^{B_h} = \psi_{E_h}^{B_h} p_{E_h} \]

Equation 127 Other securities held by households, flow

\[ \Delta^* B_{A}^{B} = \Delta B_{A}^{B} = \left( \frac{OCV_{E_h}^{B_h}}{p_{E_h}} \right) \]

Equation 128 Equities held, stock

\[ \Delta^* L_{A}^{E} = \Delta L_{A}^{E} = \frac{(1.8 \Delta (r_{a}^{E} - n_{a}^{E})) - 0.24 \nu_{c-1}}{\nu_{c} = (\frac{p_{E_h}^{r} E_{h}^{r}}{Y_{A}^{r}}) - 0.9 - 2.2 (r_{a}^{E} - n_{a}^{E}) + 3.1(i_{10years} - n_{E}^{r})} \]

Equation 129 Equities held, price

\[ p_{E_h}^{E_h} = \frac{p_{E_h}^{r} E_{h}^{r} + \psi_{E_h}^{E_h} E_{h}^{r}}{p_{E_h}} \]

Equation 130 Equities held, flow

\[ \Delta^* E_{A}^{E} = \Delta E_{A}^{E} = \left( \frac{OCV_{E_h}^{E_h}}{p_{E_h}} \right) \]

Equation 131 Profitability of equities held by households

\[ r_{a}^{E} = \frac{E_{h}^{E} \Delta E_{h}^{E} + Div_{h}^{E}}{p_{E_h}^{r} E_{h}^{r} / p_{E_h}} \]

Equation 132 Domestic equities held by households, stock

\[ p_{E_h}^{r E_h} E_{h}^{E} = \psi_{E_h} p_{E_h}^{r} E_{h}^{r} \]

Equation 133 Domestic equities held by households, price

\[ p_{E_h}^{r E_h} = \psi_{E_h} p_{E_h}^{r} \]

Equation 134 Domestic equities held by households, flow

\[ \Delta^* E_{A}^{E} = \Delta E_{A}^{E} = \left( \frac{OCV_{E_h}^{E_h}}{p_{E_h}} \right) \]

Equation 135 Foreign equities held by households, stock

\[ p_{E_h}^{E_h} E_{h}^{E} = p_{E_h}^{E_h} E_{h}^{E} - \psi_{E_h}^{E_h} p_{E_h}^{E_h} \]

Equation 136 Foreign equities held by households, price

\[ p_{E_h}^{E_h} \] exogenous

Equation 137 Foreign equities held by households, stock

\[ \Delta^* E_{A}^{E} = \Delta E_{A}^{E} = \left( \frac{OCV_{E_h}^{E_h}}{p_{E_h}} \right) \]

Equation 138 Insurance, pension funds and standardized guarantee schemes, stock

\[ \Delta \left( \frac{A_{u}^{B}}{Y_{u}} \right) = 0.27 \Delta \left( \frac{A_{u}^{B}}{Y_{u-1}} \right) + 0.2 \Delta (DepRatio_{old}) + 0.3 (1_{years} - n_{u}^{B}) + 0.1 (r_{u}^{E} - n_{u}^{E}) - 0.15 \nu_{c-1} \]

\[ \nu_{c} = \left( \frac{A_{u}^{B}}{Y_{u}} \right) + 2.7 - 0.13 (DepRatio_{old}) \]

DepRatio_{old} = dependency ratio, old

Equation 139 Insurance, pension funds and standardized guarantee schemes, flow

\[ \Delta^* A_{u}^{B} = \Delta A_{u}^{B} = \text{reval}_{u}^{B} - OCV_{u}^{B} \]

Equation 140 Loans, flow; closes account of households

\[ \Delta^* L_{u}^{h} = p_{U_{h}}^{l} L_{h}^{l} + p_{I_{h}}^{l} I_{h}^{l} + \Delta^* H^h + \Delta^* D^h + p_{U_{h}}^{B} B_{h}^{B} + p_{I_{h}}^{B} B_{h}^{B} + p_{U_{h}}^{E} E_{h}^{E} + \Delta^* Z^h - S^h + N^h + \text{Dep}_{h}^{B} + \text{Dep}_{h}^{E} + Adj^h \]

Equation 141 Change in inventories

\[ p_{E_h}^{r E_h} I_{12} \] exogenous

[Note: this is the sum of Changes in Inventories and Acquisition less disposals of valuables p52+p53, see Table 3]

Equation 142 Loans, stock

\[ L_{u}^{h} = L_{u-1}^{h} + \Delta^* L_{u}^{h} + \text{reval}_{u}^{h} + OCV_{u}^{h} \]

Equation 143 Other accounts payable/receivable, stock (net assets)

\[ Z^h = \psi_{E}^{E} p_{E} Y \]

Equation 144 Other accounts payable/receivable, flow (net assets)

\[ \Delta^* Z^h = \Delta Z^h - OCV_{Z}^{h} \]

Equation 145 Financial wealth

\[ FW^h = H^h + D^h + p_{U_{h}}^{E} E_{h}^{E} + p_{I_{h}}^{B} B_{h}^{B} + p_{I_{h}}^{B} E_{h}^{B} + A_{h}^{h} - L_{u}^{h} + Z^h \]

Equation 146 Net wealth

\[ WLT^h = p_{E}^{E} K_{E}^{h} + p_{I_{h}}^{E} K_{h}^{E} + p_{K_{h}}^{E} K_{E}^{h} + p_{E}^{E} K_{E}^{E} + \text{FW}^h \]

Financial institutions

Equation 147 Wages paid by banks

\[ W_{p}^{B_{p}} = w_{p}^{B_{p} W_{p}} \]

Equation 148 Labor contributions paid

\[ L_C_{p}^{B_{p}} = \beta_{p}^{L} W_{p}^{B_{p}} \]

Equation 149 Labor taxes paid
Equation 150 Subsidies received
\[ \text{Sub}^p = \beta_{\text{Sub}}^p Y^p \]

Equation 151 Profits
\[ \Pi^p = YA^p - W^p - LC^p - T^p + \text{Sub}^p \]

Equation 152 Interests paid
\[ \text{Int}^p = r^p \left( \rho^p L_{-1} + p^p R^p_{L-1} \right) + r_{cu} R F - 1 \]

Equation 153 Interests received
\[ \text{Int}^p = \Pi^p + \text{Int}^p + \text{Int}^{Cp} + \text{Int}^h + \text{Int}^m - \text{Int}^{Cp} - \text{Int}^h - \text{Int}^m \]

Equation 154 Dividends paid
\[ \text{Div}^p = \gamma_{\text{Div}}^p Y^p \]

Equation 155 Dividends received
\[ \text{Div}^p = \gamma_{\text{Div}}^p D_{k-1} E_{K-1} \]

Equation 156 Distributed earnings on FDI received
\[ \text{FDI}^p = r^p \left( p^p D_{k-1} - E_{K-1} \right) \]

Equation 157 Distributed earnings on FDI paid
\[ \text{FDI}^p = r^p \left( D_{k-1} - E_{K-1} \right) \]

Equation 158 Property income attributed to insurance policy holders paid
\[ \text{INS}^p = \sum_{i} \text{INS}_i^p \text{ for } i = F, G, H, R \]

Equation 159 Corporate taxes
\[ T^p = \theta^p (\Pi^p + \text{Int}^p - \text{Int}^{Cp} - \text{Div}^p - \text{Div}^{Cp} - \text{RFDI}^p - \text{RFDI}^{Cp} \]

Equation 160 Social contributions received
\[ SC^p = \theta_{SC}^p (SC^p + SC^{Cp}) \]

Equation 161 Social benefits paid
\[ SB^p = \theta_{SB}^p Y^p \]

Equation 162 Miscellaneous transfers received
\[ Tr^p = \theta_{Tr}^p Y^p \]

Equation 163 Miscellaneous transfers paid
\[ Tr^p = \theta_{Tr}^p Y^p \]

Equation 164 Disposable (corporate) income
\[ Y^p = \Pi^p + \text{Int}^p - \text{Int}^{Cp} - \text{Div}^p - \text{Div}^{Cp} + \text{RFDI}^p - \text{RFDI}^{Cp} - \text{INS}^p \]

Equation 165 Savings
\[ S^p = Y^p \]

Equation 166 Net acquisition of non-financial non-produced assets
\[ NP^p = \theta_{NP}^p Y^p \]

Equation 167 Capital transfers received
\[ Tr^p = \theta_{Tr}^p Y^p \]

Equation 168 Financing capacity/need
\[ FCN^p = S^p - p^p T^p - NP^p + Tr^p \]

Equation 169 Investment (accumulation rate)
\[ \left( \frac{I^p}{K^p} \right) = 0.02 + 0.9 \left( \frac{I^p}{K^p-1} \right) \]

Equation 170 Investment, price
\[ \Delta \ln (p^p) \]

Equation 171 Produced non-financial assets, price
\[ \Delta \ln (p^p) = 0.4 \Delta \ln (p^p_{K-1}) + 0.7 \Delta \ln (p^p_{L-1}) \]

Equation 172 Produced non-financial assets, stock
\[ p^p_{K21} K^p_{1} = \left( 1 - \delta^p_{K} \right) p^p_{K-1,21} K^p_{1} + p^p_{K2,1} T^p_{12} + K^p_{12} - \Delta p^p_{K} + OCV^p_{K2} \]

Equation 173 Non-produced non-financial assets, price
\[ p^p_{K} = \psi_{kp}^p Y^p \]

Equation 174 Non-produced non-financial assets, stock
\[ p^p_{K2,1} K^p_{2,1} = p^p_{K2,1} T^p_{21} + K^p_{2,1} - \Delta p^p_{K} + OCV^p_{K2} \]

Equation 175 Non-produced non-financial assets, flow
\[ l^p_{1} \text{ exogenous (close to nil)} \]

Financial institutions, other than the central bank

Equation 176 Bills and coins, stock
\[ H^p = \psi_{hp}^p Y^p \]

Equation 177 Bills and coins, flow
\[ \Delta H^p = \Delta H^p - OCV^p_{H} \]

Equation 178 Loans, flow; closes the row of the instrument
\[ \Delta L^p = \Delta L^p + \Delta L^p + p^p_{l1} \Delta L^p + \Delta L^p - \Delta L^p - p^p_{l2} \Delta L^p \]

Equation 179 Loans, stock
\[ L^p_{21} = \left( L^p_{12} + \Delta L^p_{12} + \Delta L^p_{12} + OCV^p_{L2} \right) \]

Equation 180 Loans, revaluation effects (closes reval for this instrument)
\[ \text{reval}_{L2} = \text{reval}_{L2} + \text{reval}_{L2} + \text{reval}_{L2} + \text{reval}_{L2} - \text{reval}_{L2} - \text{reval}_{L2} \]
Equation 181 Loans, other changes in volume (closes OCV for this instrument)

\[
OCV_{t_a}^B = OCV_{t_a}^{CB} + OCV_{t_a}^{CR} + OCV_{t_a}^{CB} - OCV_{t_a}^{CR} - OCV_{t_a}^{CR}
\]

Equation 182 Financial derivatives and employee stock options, flow; closes the row of the instrument

\[
\Delta X_{t}^B = \Delta X_{t}^{CB} + \Delta X_{t}^{CR} + \Delta X_{t}^{CB} - \Delta X_{t}^{CR}
\]

Equation 183 Financial derivatives and employee stock options, stock

\[
X_{t}^B = X_{t-1}^{CB} + \Delta X_{t}^{CB} + \text{reval}_{t_a}^B + OCV_{t_a}^B
\]

Equation 184 Financial derivatives and employee stock options, revaluation effects (closes reval for this instrument)

\[
\text{reval}_{t_a}^B = \text{reval}_{t_a}^B + \text{reval}_{t_a}^B + \text{reval}_{t_a}^B - \text{reval}_{t_a}^L
\]

Equation 185 Financial derivatives and employee stock options, other changes in volume (closes OCV for this instrument)

\[
OCV_{t_a}^B = OCV_{t_a}^{CB} + OCV_{t_a}^{CR} + OCV_{t_a}^{CR} - OCV_{t_a}^{CR} - OCV_{t_a}^{CR}
\]

Equation 186 Deposit holdings, stock

\[
D_{t}^P = \psi_{dP}p\gamma
\]

Equation 187 Deposit liabilities, flow

\[
\Delta D_{t}^P = \Delta D_{t-1}^P - \text{reval}_{t_a}^P - OCV_{t_a}^P
\]

Equation 188 Banks absorb all public debt securities available (model runs with \(v1\))

\[
p_{t_a}^{B^R} = p_{t_a}^{B^R} - p_{t_a}^{B^R} - p_{t_a}^{B^R} + p_{t_a}^{B^R} - p_{t_a}^{B^R} - p_{t_a}^{B^R}
\]

Equation 189 Public debt securities held, stock

\[
B_{t_a}^{R} = B_{t_a}^{R} + \Delta^* B_{t_a}^{R} + \left(\frac{OCV_{t_a}^{B^R}}{p_{t_a}^{B^R}}\right)
\]

Equation 190 Public debt securities, price

\[
p_{t_a}^{B^R} = \psi_{dP}^{B^R}p_{t_a}^{B^R}
\]

Equation 191 Foreign debt securities held, flow (accumulation rate)

\[
\frac{\Delta B_{t_a}^{R^F}}{B_{t_a}^{R^F}} = 0.65\left(\frac{\Delta B_{t_a}^{R^F}}{B_{t_a}^{R^F}} + 3.1(i_{t_1} - i_{t_2})\right)
\]

Equation 192 Foreign debt securities held, stock

\[
B_{t_a}^{R^F} = B_{t_a}^{R^F} + \Delta^* B_{t_a}^{R^F} + \left(\frac{OCV_{t_a}^{B^R}}{p_{t_a}^{B^R}}\right)
\]

Equation 193 Foreign debt securities held, price

\[
\Delta p_{t_a}^{B^R} = \left(\frac{\Delta B_{t_a}^{R^F}}{B_{t_a}^{R^F}}\right)\Delta p_{t_a}^{B^R} + \left(\frac{\Delta B_{t_a}^{R^F}}{B_{t_a}^{R^F}}\right)\Delta p_{t_a}^{B^R} + \text{for } i = F, CB, G, H
\]

Equation 194 Demand for other securities

\[
\left(\frac{\Delta Y^B}{p_{t_a}^V} + 0.6\sigma_{t_a}^B - 0.6(i_{t_1} - \text{NEER}_{t_1})\right)
\]

Equation 195 Other debt securities held, flow

\[
B_{t_a}^{R} = B_{t_a}^{R} + \Delta^* B_{t_a}^{R} + \left(\frac{OCV_{t_a}^{B^R}}{p_{t_a}^{B^R}}\right)
\]

Equation 196 Other securities held, price

\[
\Delta \ln(p_{t_a}^{B^R}) = 0.2 \Delta \ln(p_{t_a}^{B^R}) + 0.7 \Delta \ln(p_{t_a}^{B^R})
\]

Equation 197 Equities held, flow (financial accumulation rate)

\[
\frac{\Delta E_{t_a}^F}{E_{t_a}^F} = 0.03 + 0.4 \left(\frac{\Delta E_{t_a}^F}{E_{t_a}^F}\right) + 0.05\left(r_{t_a}^{P^F} - \pi_{t_1}\right)
\]

Equation 198 Equities held (domestic + foreign), stock

\[
E_{t_a}^F = E_{t_a}^{F^1} + \Delta E_{t_a}^F + \left(\frac{OCV_{t_a}^{B^F}}{p_{t_a}^{B^F}}\right)
\]

Equation 199 Equities held, price

\[
p_{t_a}^{B^F} = \psi_{dP}^{B^F}p_{t_a}^{B^F} + p_{t_a}^{B^F}p_{t_a}^{B^F}
\]

Equation 200 Profitability of equities held

\[
r_{t_a}^{B^F} = \frac{B_{t_a}^{B^F} + \Delta B_{t_a}^{B^F} + \text{Div}_{t_a}^B}{B_{t_a}^{B^F} + \text{Div}_{t_a}^B}
\]

Equation 201 Domestic equities held by banks, stock

\[
p_{t_a}^{B^{F^1}} = p_{t_a}^{B^{F^1}} - p_{t_a}^{B^{F^1}}
\]

Equation 202 Domestic equities held by banks, flow

\[
\Delta E_{t_a}^F = E_{t_a}^{F^1} + \left(\frac{OCV_{t_a}^{B^F}}{p_{t_a}^{B^F}}\right)
\]

Equation 203 Domestic equities held by banks, price

\[
p_{t_a}^{B^{F^1}} = \psi_{dP}^{B^{F^1}}p_{t_a}^{B^{F^1}}
\]

Equation 204 Foreign equities held by banks, stock

\[
\left(\frac{p_{t_a}^{B^{F^1}}}{p_{t_a}^{B^{F^1}}}\right) = 0.03 + 0.06 \left(\frac{p_{t_a}^{B^{F^1}}}{p_{t_a}^{B^{F^1}}}ight) - 0.4 \frac{\text{NEER}_{t_1}}{p_{t_a}^{B^F}}
\]

Equation 205 Foreign equities held by banks, stock

\[
\Delta E_{t_a}^F = E_{t_a}^{F^1} + \left(\frac{OCV_{t_a}^{B^F}}{p_{t_a}^{B^F}}\right)
\]

Equation 206 Foreign equities held by banks, price

\[
\Delta \ln(p_{t_a}^{B^F}) = 0.5 \Delta \ln(p_{t_a}^{B^F})
\]

Equation 207 Bank reserves, flow; closes the account of financial institutions excluding the central bank (this version runs with option 1)

Option 1 (QE, 2007)
$$\Delta RES = \Delta RF + \Delta D^p + p^B \Delta B^p + p^E \Delta E^p$$
$$+ \Delta A^p - (\Delta D^p + p^B \Delta B^p + p^E \Delta E^p)$$
$$+ p^B_{\text{reval}} (\Delta B^p - i^p + p^E_{\text{reval}} E^p + A^p)$$
$$+ p^B_{\text{reval}} (\Delta B^p - A^p + p^E_{\text{reval}} E^p + \Delta X^p$$
$$+ A^p + Z^p + p^B_{\text{reval}} (D^p - \gamma Y^p + N p^E + \text{Adj}^p))$$

Option 2 (no QE, 1992-2006)

$$\begin{align*}
\frac{\Delta RES}{RES_{-1}} &= 1.8 \left( \frac{\Delta D^p}{D^p_{-1}} \right)
\end{align*}$$

Equation 208 Bank reserves, stock

$$RES = RES_{-1} + \Delta RES + OCV_{DB}$$

Equation 209 Bank deposits, flow, closes the row of the instrument

$$\Delta D^p = \Delta D^p + \Delta D^p - \Delta D^p + \Delta D^p + p^B_{\text{reval}} B^p + p^E_{\text{reval}} E^p$$

Equation 210 Deposit liabilities, stock

$$D^p = D^p_{-1} + \Delta D^p + \text{reval}_B + OCV_{DB}$$

Equation 211 Deposit liabilities, revaluation effects (closes reval for this instrument)

$$\text{reval}^B = \text{reval}^B + \text{reval}^B + \text{reval}^B + \text{reval}^B + \text{reval}^B$$

Equation 212 Deposit liabilities, other changes in volume (closes OCV for this instrument)

$$OCV^B = OCV^B + OCV^B + OCV^B + OCV^B + OCV^B + OCV^B$$

Equation 213 Debt securities issued, the instrument

$$p^B_{\text{reval}} B^p = p^B_{\text{reval}} B^p + p^B_{\text{reval}} B^p + p^B_{\text{reval}} B^p + p^E_{\text{reval}} E^p$$

Equation 214 Debt securities issued, price

$$\Delta p^B = \left( \frac{B^p_{-1}}{p^B_{-1}} \right) \Delta p^B + \sum_i \left( \frac{B^p_{-1}}{p^B_{-1}} \right) \Delta p^B$$

Equation 215 (Other) debt securities issued, stock

$$B^p = B^p_{-1} + \Delta B^p + \frac{OCV^B}{p^B}$$

Equation 216 Other securities held, other changes in volume (closes OCV for this instrument)

$$OCV^B = OCV^B + OCV^B + OCV^B + OCV^B + OCV^B - OCV^B$$

Equation 217 Insurance, pension funds and standardized guarantee schemes, flow, closes the row of the instrument


Equation 218 Insurance, pension funds and standardized guarantee schemes, stock

$$A^p = A^p_{-1} + \Delta A^p + \text{reval}^B + OCV^B$$

Equation 219 Insurance, pension funds and standardized guarantee schemes, other changes in volume (closes OCV for this instrument)

$$OCV^B = \sum_i OCV^B$$

Equation 220 Equities issued (closes the block equities) \rightarrow model runs with option 1

$$p^B_{\text{reval}} E^p = p^B_{\text{reval}} E^p + p^E_{\text{reval}} E^p + p^E_{\text{reval}} E^p$$

Equation 221 Equities issued, stock

$$E^p = E^p_{-1} + \Delta E^p + \frac{OCV^B}{p^E}$$

Equation 222 Equities issued, other changes in volume (closes OCV for the instrument)

$$OCV^B = OCV^B + OCV^B + OCV^B + OCV^B + OCV^B + OCV^B$$

Equation 223 Equities issued, price

$$p^E = \frac{p^E_{-1}}{p^E_{-1}}$$

Equation 224 Profitability of equities issued

$$r^E = \left( \frac{E^p_{-1}}{p^E_{-1}} \right)$$

Equation 225 Other accounts receivable/payable, stock

$$Z^p = \psi^p_{PC} Y^p$$

Equation 226 Other accounts receivable/payable, flow

$$\Delta Z^p = \Delta Z^p - OCV^B$$

Equation 227 Financial wealth


Equation 228 Net wealth

$$WH = p^B K^B + p^B K^B + p^B K^B + FW^B$$

Banque de France

Equation 229 Interests paid

$$Int^B = r_c BES_{-1} + r_D D^p B^p$$

Equation 230 Interests received

$$Int^B = r_c BES_{-1} + r_D D^p B^p$$
Equation 231 Dividends paid
\[ D_{i}^{CB} = Y_{i}^{R} \delta_{i}^{CB} B_{A}^{CB} \]

Equation 232 Dividends received
\[ D_{i}^{CB} = Y_{i}^{R} \delta_{i}^{CB} B_{A}^{CB} \]

Equation 233 Profits
\[ R^{CB} = \ln t^{CB} - \ln t^{CB} + D_{i}^{CB} - D_{i}^{CB} \]

Equation 234 Taxes paid to the government
\[ T^{CB} = R^{CB} \]

Equation 235 Central bank deposits held by the government
\[ D_{i}^{CB} = D_{i}^{CB} \]

Equation 236 Central bank deposits assets, stock
\[ D_{i}^{CB} = Y_{i}^{R} p_{i} Y \]

Equation 237 Central bank deposits liabilities, stock
\[ D_{i}^{CB} = Y_{i}^{R} p_{i} Y \]

Equation 238 Central bank deposits assets and liabilities, flow
\[ \Delta D_{i}^{CB} = \Delta D_{i}^{CB} - \text{reval}_{i}^{CB} - OCV_{i}^{CB} \] for \( i = A, L \)

Equation 239 Central bank deposits assets, other changes in volume
\[ OCV_{i}^{CB} = a_{FORRES} OCV_{FORRES} \]

Equation 240 Bills and coins, flow; closes the row of the instrument
\[ \Delta H = \Delta H^{F} + \Delta H^{H} + \Delta H^{H} + \Delta H^{H} \]

Equation 241 Bills and coins, stock
\[ H = H_{-1} + \Delta H + OCV_{H} \]

Equation 242 Bills and coins, other changes in volume (close OCV for this instrument)
\[ OCV_{H} = \sum_{i} OCV_{H} \] for \( i = F, B, H, R \)

Equation 243 Public bonds bought by the central bank (QE), flow
\[ P_{i}^{CB} B_{A}^{CB} = Y_{i}^{R} \delta_{i}^{CB} p_{i} Y \]

Equation 244 Public bonds bought by the central bank (QE), stock
\[ D_{i}^{CB} = B_{A}^{CB} + \Delta B_{A}^{CB} + \left( \frac{OCV_{i}^{CB}}{p_{A}^{CB}} \right) \]

Equation 245 Price of public bonds bought by the central bank
\[ P_{i}^{CB} = Y_{i}^{R} p_{i} p_{i} \]

Equation 246 Foreign bonds bought by the central bank, stock
\[ D_{i}^{CB} = B_{A}^{CB} + \Delta B_{A}^{CB} + \left( \frac{OCV_{i}^{CB}}{p_{A}^{CB}} \right) \]

Equation 247 Foreign bonds bought by the central bank, flow
\[ \Delta B_{A}^{CB} = \Delta B_{A}^{CB} - \left( \frac{OCV_{i}^{CB}}{p_{A}^{CB}} \right) \]

Equation 248 Price of foreign bonds bought by the central bank
\[ p_{i}^{CB} = Y_{i}^{R} p_{i} p_{i} \]

Equation 249 Other bonds bought by the central bank (QE), flow
\[ p_{i}^{CB} \Delta B_{A}^{CB} = Y_{i}^{R} p_{i} Y \]

Equation 250 Other bonds bought by the central bank (QE), stock
\[ B_{i}^{CB} = R_{i}^{CB} + \Delta B_{A}^{CB} + \left( \frac{OCV_{i}^{CB}}{p_{A}^{CB}} \right) \]

Equation 251 Other bonds bought by the central bank, price
\[ p_{i}^{CB} = Y_{i}^{R} p_{i} p_{i} \]

Equation 252 Purchase of bank credit, flow
\[ \Delta L_{i}^{CB} = Y_{i}^{R} p_{i} Y \]

Equation 253 Purchase of bank credit, stock
\[ L_{i}^{CB} = L_{i-1}^{CB} + \Delta L_{i}^{CB} + \text{reval}_{i}^{CB} + OCV_{i}^{CB} \]

Equation 254 Refinancing, flow (this version runs with option 1)

Option 1 (QE, 2007-)
\[ \Delta R^{F} = \Delta R^{F} - \Delta R^{F} \]

Option 2 (no QE, 1992-2006)
\[ \Delta R^{F} = \Delta R^{F} - \Delta R^{F} - p_{i} \Delta B_{A}^{CB} - p_{i} \Delta E^{F} - \Delta A^{B} + \left( \Delta D_{i}^{CB} + p_{i} \Delta B_{A}^{CB} + p_{i} \Delta E^{F} + \Delta A^{B} \right) + p_{i} \Delta B_{A}^{CB} + \Delta L_{i}^{CB} + p_{i} \Delta E^{F} + \Delta X_{i}^{F} + \Delta Z^{F} + p_{i} \Delta Y - S + \text{Tr}_{F} + N P^{B} + \text{Adj}^{F} \]

Equation 255 Refinancing, stock
\[ RF = RF_{-1} + \Delta RF + OCV_{RF} \]

Equation 256 Refinancing, other changes in volume (close OCV for this instrument)
\[ OCV_{RF} = OCV_{RF} - OCV_{RF} \]

Equation 257 Refinancing by the central bank, flow
\[ \Delta R^{F} = \phi_{i}^{CB} p_{i} Y \]

Equation 258 Refinancing by the central bank, stock
\[ R^{CB} = R^{CB} + \Delta R^{F} + OCV_{RF} \]

Equation 259 Domestic equities held, flow
\[ p_{i}^{CB} = \phi_{i}^{CB} p_{i} Y \]

Equation 260 Domestic equities held, stock
\[ E_{A}^{CB} = E_{A-1}^{CB} + \Delta E_{A}^{CB} + \left( \frac{OCV_{i}^{CB}}{p_{A}^{CB}} \right) \]

Equation 261 Domestic equities held, price
\[ p_{i}^{CB} = \text{exogenous} \]
Equation 262 Foreign equities held, flow
\[ p_{E_{CB}} = \varphi_{E_{CB}} p_{v} Y \]

Equation 263 Foreign equities held, stock
\[ E_{CB} = E_{CB} + \Delta E_{CB}^{+} + \left( \frac{OCU_{CB}}{E_{CB}} \right) \]

Equation 264 Foreign equities held, price
\[ p_{E_{CB}} \] exogenous

Equation 265
\[ p_{E_{CB}} = p_{E_{CB}}^{+} + \Delta E_{CB}^{+} \]

Equation 266 Other accounts payable/receivable
\[ Z_{CB} \] exogenous

Equation 267 Equity issued, stock
\[ p_{E_{CB}} \] exogenous

Equation 268 Equity issued, flow
\[ \Delta E_{CB}^{+} = \Delta E_{CB}^{+} \left( \frac{OCU_{CB}}{p_{E_{CB}}} \right) \]

Equation 269 Equity issued, price
\[ p_{E_{CB}} = \varphi_{E_{CB}} p_{v} Y \]

Equation 270 Net wealth = financial wealth
\[ W_{CB}^{+} = F_{CB}^{+} + R_{CB}^{+} + T_{RBG}^{+} + D_{CB}^{+} + p_{E_{CB}}^{+} + \Delta E_{CB}^{+} \]

Equation 271 Central bank’s accounting equilibrium (system’s unwritten identity)
\[ p_{E_{CB}} \Delta E_{CB}^{+} + \Delta T_{RBG}^{+} + \Delta E_{CB}^{+} + p_{E_{CB}}^{+} + \Delta T_{RBG}^{+} + \Delta E_{CB}^{+} \]

Government

Equation 272 Wages paid by the public sector
\[ W_{P}^{G} = w_{P}^{G} N^{G} \]

Equation 273 Labor contributions paid
\[ L_{C}^{G} = \beta_{L}^{G} W_{P}^{G} \]

Equation 274 Labor taxes paid
\[ T_{i}^{G} = \beta_{T}^{G} W_{P}^{G} \]

Equation 275 Labor taxes received
\[ T_{i}^{G} = \sum T_{i}^{G} - T_{i}^{p} \text{ for } i = F, B, CB, G, H \]

[Operating surplus of the public sector \( \Rightarrow N^{G} = VA^{G} - W_{P}^{G} - LC_{P}^{G} - T_{i}^{G} + Sub^{G} \)]

Equation 276 Subsidies on production
\[ Sub = \beta_{Sub}^{G} VA \]

Equation 277 Value added taxes
\[ T^{p} = \gamma_{T^{p}} VA \]

Equation 278 Interests received
\[ Int^{p} = \gamma_{Int}^{p} \]

Equation 279 Interests paid
\[ Int^{p} = \gamma_{Int}^{p} \]

Equation 280 Dividends received
\[ Div^{p} = \gamma_{Div}^{p} \]

Equation 281 Rents received
\[ RENT^{p} = \gamma_{RENT}^{p} \]

Equation 282 Income taxes received
\[ T = \sum T_{i}^{G} \text{ for } i = F, B, CB, H, R \]

Equation 283 Social contributions received
\[ SC_{CB}^{G} = SC_{CB}^{G} - \sum SC_{i}^{G} \text{ for } i = F, B, R \]

Equation 284 Social benefits paid
\[ SB_{CB}^{G} = \theta_{SB}^{G} p_{v} Y \]

Equation 285 Miscellaneous transfers paid
\[ Tr^{G} = \beta_{Tr}^{G} p_{v} Y \]

Equation 286 Disposable income
\[ Y_{d}^{G} = VA^{G} - W_{P}^{G} - LC_{P}^{G} - T_{i}^{G} + Sub^{G} + T_{r}^{G} + Int^{p} - Int^{p} + Div^{p} + INS^{p} + RENT^{p} + T^{p} + SC^{G} - SB_{P}^{G} - Tr^{G} \]

Equation 287 Current public spending (collective and individual)
\[ C^{G} = \beta_{G}^{G} Y \]

Equation 288 Price of current public expenditure
\[ \Delta \ln(p_{\xi}^{G}) = 1.02 \Delta \ln(p_{\xi}^{G}) \]

Equation 289 Savings (current public balance)
\[ S^{G} = Y_{d}^{G} - p_{\xi}^{G} C^{G} \]

Equation 290 Capital transfers paid
\[ Tr^{G} = Tr^{G} + Tr_{p}^{G} + Tr_{p}^{G} + Tr_{p}^{G} - Tr_{p}^{G} - Tr_{p}^{G} \]

Equation 291 Acquisitions less disposals of non-financial non-produced assets
\[ NP^G = \beta \tilde{p}_i^G p_Y \]

Equation 292 Financing capacity/need

\[ FCN^G = S^G - p_{i1}^G t_1^G - p_{i2}^G t_2^G - NP^G - TV_{i0}^G \]

Equation 293 Investment

\[ t_1^G = \beta \tilde{p}_1^G \]

Equation 294 Investment, price

\[ \Delta \ln(p_1^G) = 1.1 \Delta \ln(p_1) \]

Equation 295 Produced non-financial assets, price

\[ \Delta \ln(p_{i0}^G) = 0.3 \Delta \ln(p_{i-1}^G) + 0.6 \Delta \ln(p_f) \]

Equation 296 Produced non-financial assets, stock

\[ p_{i0}^G, K_{i-1}^G = (1 - \delta_{i0}^G) p_{i-1}^G, K_{i-1}^G + p_{i0}^G, t_1^G, + K_{i-1}^G, \Delta p_{i0}^G + \text{OCV}_{i0}^G \]

Equation 297 Non-produced non-financial assets, price

\[ p_{i0}^G = \psi_{i0}^G, p_{i1}^G \]

Equation 298 Non-produced non-financial assets, stock

\[ p_{i0}^G, K_{i-1}^G = p_{i-1}^G, K_{i-1}^G + p_{i0}^G, t_1^G, + K_{i-1}^G, \Delta p_{i0}^G + \text{OCV}_{i0}^G \]

Equation 299 Government’s account vis-à-vis the central bank, stock

\[ D_{i1}^{iGB} = \psi_{i1}^{iGB} V A^G \]

Equation 300 Government’s account vis-à-vis the central bank, flow

\[ \Delta D_{i1}^{iGB} = \Delta D_{i1}^{iGB} - \text{OCV}_{i1}^{iGB} \]

Equation 301 Deposits received by the government, stock

\[ D_{i1}^C = \psi_{i1}^C (D_{i1}^C - h m) \]

Equation 302 Deposits received by the government, flow

\[ \Delta D_{i1}^C = \Delta D_{i1}^C - \text{reval}_{i1}^G - \text{OCV}_{i1}^C \]

Equation 303 Deposits, stock

\[ D_{i1}^C = \psi_{i1}^C V A^G \]

Equation 304 Deposits, flow

\[ \Delta D_{i1}^C = \Delta D_{i1}^C - \text{reval}_{i1}^G - \text{OCV}_{i1}^C \]

Equation 305 Foreign securities held by the government, stock

\[ p_{i1}^{GB} p_{i1}^G = \psi_{i1}^{GB} p_Y \]

Equation 306 Foreign securities held by the government, flow

\[ \Delta p_{i1}^{GB} = \Delta p_{i1}^G \]

Equation 307 Foreign securities held by the government, price

\[ p_{i1}^{GB} = \psi_{i1}^{GB} p_{i1}^G \]

Equation 308 Other securities held by the government, stock

\[ n_p^G, B^G \] exogenous

Equation 309 Other securities held by the government, flow

\[ \Delta n_p^G, B^G = \Delta B^G = \frac{(\text{OCV}_{i1}^G)}{p_{i1}^G} \]

Equation 310 Other securities held by the government, price

\[ p_{i1}^{GB} = \psi_{i1}^{GB} p_{i1}^G \]

Equation 311 Equity held, stock

\[ p_{i1}^{GB} E_A^G = \psi_{i1}^{GB} p_Y \]

Equation 312 Equity held, price

\[ p_{i1}^{GB} E_A^G = \psi_{i1}^{GB} p_Y \]

Equation 313 Equity held, flow

\[ \Delta E_A^G = \Delta E_A^G - \frac{(\text{OCV}_{i1}^G)}{p_{i1}^G} \]

Equation 314 Domestic equities held by the government, stock

\[ p_{i1}^{GR} E_A^{GR} = \psi_{i1}^{GR} p_{i1}^G \]

Equation 315 Domestic equities held by the government, flow

\[ \Delta E_A^{GR} = \Delta E_A^{GR} - \frac{(\text{OCV}_{i1}^{GR})}{p_{i1}^{GR}} \]

Equation 316 Domestic equities held by the government, price

\[ \Delta \ln(p_{i1}^{GR}) = 0.4 \Delta \ln(p_{i1}^G) - 0.5 \text{vc}_{i1}^G \]

Equation 317 Foreign equities held by the government, stock

\[ p_{i1}^{GR} E_A^{GR} = p_{i1}^G E_A^G - p_{i1}^{GR} E_A^{GR} \]

Equation 318 Foreign equities held by the government, price

\[ p_{i1}^{GR} \] exogenous

Equation 319 Foreign equities held government, flow

\[ \Delta E_A^{GR} = \Delta E_A^{GR} - \frac{(\text{OCV}_{i1}^{GR})}{p_{i1}^{GR}} \]

Equation 320 Profitability of equities held

\[ \text{r}_{i1}^{GB} = \frac{E_A^{GB} - \Delta p_{i1}^{GB} + Div_{i1}^{GB}}{p_{i1}^{GB} E_A^{GB}} \]

Equation 321 Financial derivatives held by the government, stock

\[ \text{X}^G = \psi_{i1}^G V A^G \]

Equation 322 Financial derivatives held by the government, flow

\[ \Delta \text{X}^G = \Delta \text{X}^G - \text{reval}_{i1}^G - \text{OCV}_X^G \]

Equation 323 Total public indebtedness, flow; closes the account of the government
Equation 324 Public bonds (model runs with $v1$)

$$\ln(p_{BL}^c) = -0.39 + 0.11 \ln \left( \frac{1}{v1} \right)$$

$p_{BL}^c$ exogenous $v2$

Equation 325 Total public indebtedness, stock

$$BL^c_1 = BL^c_{1-1} + RBL^c_1 + \frac{OCV_{BL}^c}{p_{BL}^c}$$

Equation 326 Total public indebtedness, price

$$\Delta \ln(p_{BL}^c) = 0.82 \ln(p_{BL}^c)$$

Equation 327 Bonds issued, stock

$$p_{BL}^c \cdot B^c_1 = \psi_{p}^B \cdot p_{BL}^c \cdot BL^c_1 \left( = \psi_{p}^B \left( p_{BL}^c \cdot B^c_1 + L^c_1 \right) \right)$$

Equation 328 Bonds issued, price

$p_{BL}^c$ exogenous

Equation 329 Public debt securities held, other changes in volume (closes OCV for this instrument)

$$OCV^c_{BL} = OCV\_{BL}^c + OCV\_{BL}^r + OCV\_{BL}^g + OCV\_{BL}^g$$

Equation 330 Bonds issued, flow

$$\Delta B^c_1 = \frac{OCV^c_{BL}}{p_{BL}^c}$$

Equation 331 Credit demand, flow

$$\Delta K^c_1 = p_{BL}^c \cdot \Delta B^c_1 - p_{BL}^c \cdot \Delta B^c_1$$

Equation 332 Credit demand, stock

$L^c_1 = L^c_{1-1} + \Delta L^c_1 + reval_{L^c_1} + OCV^c_{L^c}$

Equation 333 Insurance, pension funds and guarantee schemes, stock

$$A^G_1 = \psi_{G}^P \cdot p_{F} \cdot Y$$

Equation 334 Insurance, pension funds and guarantee schemes, flow

$$\Delta A^G_1 = \Delta A^G_1 - reval_{L^c} - OCV^c_{L^c}$$

Equation 335 Other accounts payable/receivable, stock

$$Z^c = \psi_{Z}^P \cdot p_{F} \cdot Y$$

Equation 336 Other accounts payable/receivable, flow

$$\Delta Z^c = \Delta Z^c - OCV^c$$

Equation 337 Financial wealth

$$FW^c = D^c_{A^{g+s}} + D^c_{A^{g+s}} + p_{BL}^c \cdot B^c_1 + p_{BL}^c \cdot B^c_1 + p_{BL}^c \cdot E^c_1 + A^G_1 + X^c_1 + Z^c - D^c - p_{BL}^c \cdot B^c_1 - L^c_1$$

Equation 338 Net wealth

$$WTH^c = p_{K}^c \cdot K^c_1 + p_{K}^c \cdot K^c_1 + p_{K}^c \cdot K^c_2 + FW^c$$

Rest of the world

Equation 339 Labor contributions paid

$$LC^\beta_r = \beta_{r,5} \cdot W^F_r$$

Equation 340 Import taxes (on value added), paid as a fraction of imports

$$T^r = \theta^r \cdot \frac{F_{IM}}{M}$$

Equation 341 Wages paid

$W^F_r$ exogenous

Equation 342 Subsidies

$$Sub_{r,5}^F = \beta_{r,5} \cdot p_{F} \cdot Y$$

Equation 343 Interests received

$$Int^F_r = r^F \left( D^F_{r,1} + p_{BL}^c \cdot B^c_{r,1} + p_{BL}^c \cdot B^c_{r,1} + L^c_{r,1} \right)$$

Equation 344 Interests paid

$$Int^F_r = r^F \left( D^F_{r,1} + p_{BL}^c \cdot B^c_{r,1} + L^c_{r,1} \right) + r^F \cdot T^G \cdot T_{-1}$$

Equation 345 Dividends paid

$$Div^F_r = \gamma^F \cdot p_{BL}^c \cdot E^F_{r,1}$$

Equation 346 Dividends received

$$Div^F_r = Div^F_r + Div^F_r + Div^C_r + Div^F_r - Div^F_r - Div^F_r - Div^C_r - Div^C_r$$

Equation 347 Reinvested earnings on FDI paid

$$RFDI^F_r = r^F \cdot p_{F} \cdot E^F_{r,1}$$

Equation 348 Reinvested earnings on FDI received

$$RFDI^F_r = r^F \cdot p_{F} \cdot E^F_{r,1}$$

Equation 349 Property income attributed to insurance policy holders received

$$INS^F_r = r^F \cdot A^G_{r,1}$$

Equation 350 Import duties (paid on foreign income)

$T^r$ exogenous

Equation 351 Social benefits received

$$SB^F_r = \beta_{r,5} \cdot p_{F} \cdot Y$$

Equation 352 Social benefits paid

$$SB^F_r = \beta_{r,5} \cdot p_{F} \cdot Y$$

Equation 353 Social contributions received

$$SC^F_r = \theta^r \cdot (SC^F_r + SC^F_r)$$

Equation 354 Exports of goods and services (volume)
\[\Delta \ln(X) = 0.3 \Delta \ln(X_{-1}) + 0.4 \Delta \ln(Y') - 0.2 \Delta \ln\left(\frac{P_X}{P_{X_{-1}}}\right) - 0.14 v_{c,-1}\]

\[v_c = \ln(X) - 1.7 - 0.6 \ln(Y') + 0.5 \ln\left(\frac{P_X}{P_{X_{-1}}}\right)\]

Equation 355 Price of exports of goods and services
\[\ln(p_x) = 0.03 + 0.5 \ln(p_{x_{-1}}) + 0.3 \ln(p_x)\]

Equation 356 Imports of goods and services (volume)
\[\Delta \ln(IM) = 2.2 \Delta \ln(Y') + 0.5 v_{c,-1}\]

\[v_c = \ln(IM) - 1.8 \ln(Y') + 0.2 \ln(p_{IM}) + 8.5 - 0.01 t\]

Equation 357 Price of imports of goods and services
\[\Delta \ln(p_{IM}) = 0.12 \Delta \ln(p_{IM_{-1}}) + 0.7 \Delta \ln(p_{MESH}) - 0.45 v_{c,-1}\]

\[v_c = \ln(p_{IM}) - 0.6 \ln(p_{MESH})\]

Equation 358 Financing capacity/need \(-\) current account
\[FCN^R = p_{IM}IM - p_xX + W^R - W^p + LC^R - LC^p + T^R - Sub^R - Sub^p + T^p + ln^R - ln^p + Div^R - Div^p + RDF^R + RDF^p + Ins^R - T^R + SC^R + SB^R + Tr^R_i - Tr^p_i - Tr^R_i\]

Equation 359 Unwarranted equilibrium of goods and services with the rest of the world (S \(-\) I \(-\) Current account = 0)
\[\sum_i FCN_i = 0 \quad \text{for } i = F, B, G, H, R\]

Equation 360 Bills and coins, stock (0 before 2002)
\[H^R = \eta_{Hp}Y\]

Equation 361 Bills and coins, flow
\[\Delta^R H^R = \Delta H^R - OCV^R_H\]

Equation 362 Deposits held by foreigners, flow (accumulation rate)
\[\left(\frac{\Delta^D^R_{P_{X_{-1}}}}{P_{X_{-1}}}\right) = 2.9 \left(\frac{\Delta Y}{Y_{-1}}\right) + 2 \left(\frac{\Delta^\text{NEER}_{-1}}{NEER_{-1}}\right)\]

Equation 363 Deposits held by foreigners, stock
\[D^R_{P_X} = D^R_{P_X_{-1}} + \Delta^R D^R_{P_X} + OCV^R_{A}\]

Equation 364 Refinancing, flow
\[\Delta^R RF^R \text{ exogenous}\]

Equation 365 Refinancing, stock
\[RF^R = RF^R_{P_X_{-1}} + \Delta^R RF^R + OCV^R_{A}\]

Equation 366 Public debt securities held by the RoW, flow
\[\left(\frac{\Delta B^R_{P_X_{-1}}}{B^R_{P_X_{-1}}}\right) = 0.04 - 0.14 \left(\frac{\Delta^B^R_{P_X_{-1}}}{B^R_{P_X_{-1}}}\right) + 2.2 \left(\frac{\Delta Y}{Y_{-1}}\right) + 3.9 \left(\frac{\Delta^\text{NEER}_{-1}}{NEER_{-1}}\right)\]

Equation 367 Public debt securities held by the RoW, stock
\[B^R_{P_X} = B^R_{P_X_{-1}} + \Delta^R B^R_{P_X} + \frac{OCV^R_{B^R_{P_X}}}{P_{A_{-1}}}\]

Equation 368 Public debt securities held by the RoW, price
\[\Delta p^R_{B^R_{P_X}} = \frac{B^R_{P_X_{-1}}}{B^R_{P_X_{-1}}} \left(\sum_i \Delta p^R_{A_i} - \sum_i \Delta p^R_{P_{A_i}}\right) \text{ for } i = F, B, CB\]

Equation 369 Other debt securities held by the RoW, flow
\[\left(\frac{\Delta^B^R_{F}}{B^R_{F_{-1}}}\right) = 0.34 \left(\frac{\Delta^B^R_{B_{-1}}}{B^R_{B_{-1}}}\right) + 2.2 \left(\frac{\Delta Y}{Y_{-1}}\right) + 3.1 \left(\frac{\Delta^\text{NEER}_{-1}}{NEER_{-1}}\right)\]

Equation 370 Other debt securities held by the RoW, price
\[p^R_{B^R_{F}} = \eta_{p_{B^R_{F}}} p^R_{B^R_{F}}\]

Equation 371 Other debt securities held by the RoW, stock
\[B^R_{F} = B^R_{F_{-1}} + \Delta^R B^R_{F} + \frac{OCV^R_{B^R_{F}}}{P_{A_{-1}}}\]

Equation 372 Loans held by the RoW, flow
\[\left(\frac{\Delta^L^R_{L_{-1}}}{L_{-1}}\right) = 0.03 + 1.2 \left(\frac{\Delta Y}{Y_{-1}}\right) + 1.3 \left(\frac{\Delta^\text{NEER}_{-1}}{NEER_{-1}}\right)\]

Equation 373 Loans held by the RoW, stock
\[L^R_{A_{-1}} = L^R_{A_{-1}} + \Delta^L^R_{A_{-1}} + OCV^R_{L_{A_{-1}}}\]

Equation 374 Domestic equities held by the RoW, flow (includes inward FDI)
\[\left(\frac{\Delta^E^R_{E_{-1}}}{E_{-1}}\right) = 0.04 + 0.05 \left(\frac{r^R_{E_{-1}} - r_{-1}}{r_{-1}}\right) + 0.6 \left(\frac{\Delta Y_{-1}}{Y_{-1}}\right)\]

Equation 375 Equities, flow-stock
\[\Delta^R E^R = \Delta E^R + \frac{OCV^R_{E^R}}{P_{E_{-1}}}\]

Equation 376 Equities held by the RoW, price
\[\Delta p^R_{E^R} = \sum_i \left(\frac{E^R_{i_{-1}}}{E_{i_{-1}}}\right) \Delta p^R_{E^R} - \sum_i \left(\frac{E^R_{i_{-1}}}{E_{i_{-1}}}\right) \Delta p^R_{E^R}\]

Equation 377 Profitability of equities held by the RoW
\[r^R_{E_{-1}} = \left(\frac{E^R_{A_{-1}} \Delta p^R_{E_{-1}} + Div^R_{E_{-1}}}{P_{E_{-1}} E_{A_{-1}}}\right)\]

Equation 378 Insurance, pension funds and standardized guarantee schemes held by the RoW, stock
\[A^R_{P} = \eta_{A_{P}} p_Y\]

Equation 379 Insurance, pension funds and standardized guarantee schemes held by the RoW, flow
\[\Delta^A^R_{P} = \Delta A^R_{P} - OCV^R_{A_{P}}\]

Equation 380 Financial derivatives and employee stock options, stock (net)
\[X^R = \eta^R_{X_{P}} p_Y\]
Equation 381 Financial derivatives and employee stock options, flow (net)
\[ \Delta X_R^p = \Delta X_R^p - OCV^p_{Ri} \]

Equation 382 Deposits received by the RoW, stock
\[ D^p_L = D^p_{L+1} + \Delta^r D^p_L + \text{reval}_{L+1} + OCV^p_{L+1} \]

Equation 383 Deposits received by the RoW, closes the rest of the world’s account
\[ \Delta^r D^p_L = \Delta^r H^p + \Delta^r D^p_R + \sum_{i} p_{Ri}^p \Delta^r B^p_i + \Delta^r L^p + \sum_{i} p_{Ri}^p \Delta^r E^p_i + \Delta^r A^p_i + \Delta^r Z^p - \text{Adj}^p - \sum_{i} \text{FCN}^p_i - p_{Ri}^p \Delta^r G^CB - \Delta^r R^p \Delta^r H^p - p_{Ri}^p \Delta^r B^p_i - \Delta^r L^p - p_{Ri}^p \Delta^r E^p_i - \Delta^r X_R^p \]

Equation 384 Debt securities issued by the RoW, flow; closes the line foreign debt securities
\[ p_{Ri}^p \Delta^r B^p_i = p_{Ri}^p \Delta^r B^p_i + \sum_{i} \frac{OCV^p_{Ri}}{p_{Ri}^p} \]

Equation 385 Debt securities issued by the RoW, stock, price (xr = bilateral €/$ exchange rate)
\[ p_{Ri}^p = p_{Ri}^p \times r \]

Equation 386 Debt securities issued by the RoW, stock
\[ B^p_L = B^p_{L+1} + \Delta^r B^p_L + \frac{OCV^p_{Ri}}{p_{Ri}^p} \]

Equation 387 Debt securities issued by the RoW, other changes in volume (closes OCV for this instrument)
\[ OCV^p_{L+1} = \sum_{i} OCV^p_{L+1} \text{ for } i = F, B, CB, G, H \]

Equation 388 Credit demand by the RoW, flow (accumulation rate)
\[ \left( \frac{\Delta L^p}{L^p_{L-1}} \right) = 1.9 \left( \frac{\Delta Y}{Y_{L-1}} \right) \]

Equation 389 Credit demand by the RoW, stock
\[ L^p_L = L^p_{L-1} + \Delta^r L^p_L + \text{reval}_{L+1} + OCV^p_{L+1} \]

Equation 390 Foreign equities held by domestic agents, stock (includes outward FDI)
\[ E^p_L = E^p_{L+1} + \Delta^r E^p_L + \frac{OCV^p_{Ri}}{p_{Ri}^p} \]

Equation 391 Foreign equities held by domestic agents, flow (includes outward FDI), value
\[ p_{Ri}^p \Delta^r E^p_i = p_{Ri}^p \Delta^r E^p_i + \sum_{i} \frac{OCV^p_{Ri}}{p_{Ri}^p} \]

Equation 392 Foreign equities held by domestic agents, flow (includes outward FDI), volume
\[ \Delta^r E^p_i = \left( \frac{p_{Ri}^p \Delta^r E^p_i}{p_{Ri}^p} \right) \]

Equation 393 Foreign equities held by domestic agents, other changes in volume (closes OCV for this instrument)
\[ OCV^p_{L+1} = \sum_{i} OCV^p_{L+1} \text{ for } i = F, B, CB, G, H \]

Equation 394 Foreign equities held by domestic agents, price (includes outward FDI)
\[ \Delta p^p_{L+1} = \left( \frac{p^p_{Ri} L^p_{Ri}}{p_{Ri}^p} \right) \Delta p^p_{Ri} \text{ for } i = F, B, CB, G, H \]

Equation 395 Profitability of equities issued by the RoW
\[ r^p_{L+1} = \left( \frac{E^p_{L+1} \Delta p^p_{L+1}}{p^p_{Ri} L^p_{Ri}} + \text{Div}^p_{L+1} \right) \]

Equation 396 Target 2

Equation 397 Monetary gold and Special Drawing Rights, stock
\[ G^CB = G^CB + \Delta^r G^CB + \left( \frac{OCV^p_{Ri}}{p_{Ri}^p} \right) \]

Equation 398 Monetary gold and Special Drawing Rights, flow
\[ p^p_{Ri} \Delta^r G^CB \]

Equation 399 Monetary gold and Special Drawing Rights, price
\[ \Delta \ln(p^p_{Ri}) = 0.5 \Delta \ln(p_{poise}) - 0.5 \nu_{vc-1} \]
\[ \nu_{vc} = \ln(p^p_{Ri}) - 0.98 \ln(p_{poise}) \]

Equation 400 Other accounts payable/receivable, stock
\[ Z^p = Z^p + \Delta^r Z^p + OCV^p \]

Equation 401 Other accounts payable/receivable, flow, closes the instrument
\[ \Delta Z^p = - \sum_{i} \Delta^r Z^p \text{ for } i = F, B, G, H \]

Equation 402 Other accounts payable/receivable, other changes in volume (closes OCV for this instrument)
\[ OCV^p_{L+1} = \sum_{i} OCV^p_{L+1} \text{ for } i = F, B, G, H \]

Equation 403 Net worth
\[ W_{L+1}^H = H^R + p_{Ri}^p B^R_i + p_{Ri}^p E^R_i + p_{Ri}^p B^F_i + p_{Ri}^p E^F_i + L^R + p_{Ri}^p D^R_i + A^R_i + X^R_i + Z^R - p^p_{F} G^CB - p_{Ri}^p D^R_i - TRGT2 - p_{Ri}^p B^R_i - L^R - p_{Ri}^p E^R_i \]

Prices, wages, employment and interest rates

Equation 404 General price index
\[ \Delta \ln(p_{i}) = 0.01 + 0.45 \Delta \ln(ULC) + 0.3 \Delta GAP + 0.03 \Delta \ln(p_{i-1}) - 0.4 \nu_{vc-1} \]
\[ \nu_{vc} = \ln(p_{i}) - 0.4 - 0.9 \Delta \ln(ULC) \]
Equation 405 Unit labor costs, market sector

\[
ULC^M = \left(\frac{W^M + LC^M + LCW_p^{HM} + T^H}{\nu_q^M}\right)
\]

Note: \( LC^M = LC_p^M + LC_p^M + LC_p^M \) and \( T^H = T^H_M + T^H_p \) and \( LCW_p^{HM} = \theta_{LM} W^M \)

Equation 406 Wages paid, market sector

\[ W^M = w^MN^S^M \]

Equation 407 Total wages paid in France

\[ W = w^M + W_p^C \]

Equation 408 Employment in the market sector (salaried + non-salaried)

\[
\Delta \ln(N^M) = 0.5 \Delta \ln(N^C) + 0.5 \Delta \ln(va^M) - 0.08vc_{-1} \\
vc_{i} = \ln(N^S) - \left(\frac{-0.5 \ln(K^i_M) - 0.014t + 0.01t_{1992}}{1 - 0.5}\right)
\]

Equation 409 Non-salaried workers (total household employment = salaried + non-salaried), market sector

\[ N^N^S = N^M - N^S^M \]

Equation 410 Salaried employment, share of total employment (market sector)

\[
\ln\left(\frac{N^S^M}{N^M}\right) = 3.9 + 0.009t - 0.01f_{2000-2019}
\]

Equation 411 Firms’ workers

\[ N^F = N^M - N^H - N^N^S \]

Equation 412 Total employment

\[ N = N^M + N^G \]

Equation 413 Salaried workers, households

\[ N^H^S = N^H - N^N^S \]

Equation 414 Public sector (i.e. non-market sector) workers

\[ N^C = N^N^S \text{ exogenous} \]

Equation 415 Banks and households workers

\[ N^i = y^i_S N^M \text{ for } i = B, H \]

Equation 416 Wage per worker, market sector

\[
\Delta \ln\left(\frac{w^M}{N^M}\right) = \Delta \ln(w^M) \\
= 0.005 + 0.5 \Delta \ln(w^C_{-1}) + 0.43 \Delta \ln(va^C) \\
+ 0.38 \Delta \ln\left(\frac{\nu_q^M}{N^M}\right) - 0.38 \ln\left(\frac{\nu_q^M}{N^M}\right) \\
- 0.24 \ln(u) \\
v_c = \ln(w^M) - 0.94 \ln(p^C) + 0.1 \ln(u) - 0.7 \Delta \ln\left(\frac{\nu_q^M}{N^M}\right)
\]

Equation 417 Wage per worker paid by firms

\[
\Delta \ln(w^F_{p-1}) = 0.4 \Delta \ln(w^F_{p-1}) + 1.01 \Delta \ln(w^M) - 0.4 \Delta \ln(w^M) 
\]

Equation 418 Wage per worker paid by banks

\[
\Delta \ln(w^B_{p-1}) = 1.06 \Delta \ln(w^M) - 0.17 \ln(w^M) \\
v_c = \ln(w^B_{p-1}) + 1 - 1.12 \ln(w^M) 
\]

Equation 419 Wage per worker paid by the public sector

\[
\Delta \ln(w^G_{p-1}) = 0.45 \Delta \ln(w^G_{p-1}) + 0.53 \Delta \ln(w^M) - 0.17 \ln(w^M) \\
v_c = \ln(w^G_{p-1}) + 0.2 - 1.02 \ln(w^M) 
\]

Equation 420 Output gap

\[ gap = \left(\frac{\nu_q^M - \nu_q^B^M}{\nu_q^P^M}\right) \]

Equation 421 Potential output; potential value added in volume (model runs with option 2)

**Option 1**

\[ \left(\frac{\nu_q^P^M}{K^M_1}\right) = \theta^P_M \]

**Option 2**

\[ \ln\left(\frac{\nu_q^P^M}{N^M}\right) = 0.8 + 0.5 \ln\left(\frac{K^M_1}{N^M}\right) + 0.014t - 0.01t_{1992-2019} \]

Equation 422 Produced non-financial assets of the market sector, stock

\[ K^M_1 = K^M_1 + K^B_1 + K^H^N \]

Equation 423 Unemployment (number of unemployed)

\[ U = AP - N \]

Equation 424 Unemployment rate

\[ u = \left(\frac{U}{AP}\right) \]

Equation 425 Active population

\[
\Delta \ln(AP) = 0.4 \Delta \ln(N) + 0.4 \Delta \ln(TAP) - 0.2 \ln(u) \\
v_c = \ln(AP) - 0.37 \ln(N) - 0.56 \ln(TAP) - 0.002t
\]

Equation 426 Interest rate received by firms

\[ r^F_1 = 3.6 + 0.63r_c \]

Equation 427 Interest rate received by households

\[ r^H_1 = 1.6 + 0.5r_c \]

Equation 428 Interest rate paid by firms

\[ r^F_1 = 1.6 + 0.7l_{10yrs} \]

Equation 429 Interest rate received by banks

\[ r^B_1 = 0.4 + 0.5r^H_{-1} + 0.4l_{10yrs} \]
Exogenous parameters and variables

Note: exogenous parameters change over time (thus, they do not have a single-value), depending on the values of the variables of the corresponding equations they belong to. Example, $\alpha_{IA}^D$ (in Equation 5) is calculated as $\alpha_{IA}^D = VA^H / (VA - VA^B - VA^C)$, so that the parameter varies across periods. In the projections, they are given the last value.

Equation 430 Interest rate paid by banks

$$r_p^B = 0.9 + 0.9i_{10yrs}$$

Equation 431 Interest rate received by the government

$$r_A^G = 2.5 + 1.6\%$$

Equation 432 Interest rate paid by the government

$$r_p^C = 0.9 + 0.85i_{10yrs}$$

Equation 433 Interest rate paid by households

$$r_h^B = 0.9i_{10yrs}$$

Equation 434 Interest rate received by the rest of the world

$$r_d^B = i_{10yrs} + k_{IA}^c$$

Equation 435 Interest rate on credit, long-term

$$i_{LT}^E = 0.93i_{10yrs}$$

Equation 436 Interest rate on deposits, short-term

$$r_d = 1.4 + 0.5r_e$$

Equation 437 Interest rate ECB

$$r_e = r_{ECB}$$

Equation 438 Long-term interest rate, 10 years (OECD)

$$i_{LT}^E = 0.93i_{10yrs}$$

Simulations

Observed vs simulated

Figure 1 GDP and components

Observed vs baseline, simulations start in 1996 solved with Newton’s algorithm

The graphs for behavioral equations ($p_Y$, $C^H$, $I_1^H$, $\Delta^\delta K^F$, $X$, $p_X$, $IM$, $p_{IM}$) display the observed series (blue) and the simulated series (red). The graphs of the remaining series (mainly the identities $Y$, $p_Y$, $p_Y^H$, GAP and other ratios) display observed left-hand side of the equation (blue), observed right-hand side (red) and simulated series (green).
GDP in volume (prices of 2015), $Y$

GDP in value, $p_Y Y$

Consumer price index, $p_C^H$

Unit labor costs, market sector: \( \left( \frac{W^M + LC^M + LCW_D^M + T^M}{V^M} \right) \)

Labor productivity market sector, thousands: \( \left( \frac{V^M}{W^M} \right) \)

GDP growth (%)

Inflation since 1990 (%)

Household consumption in volume, $C^H$

Household investment volume, $I^H$
Wage per worker, market sector

Output gap, \( \Delta \)

Firms’ investment, \( \Delta K^F \) (eq. 32)

Price of firms’ investment, \( p^F \) (eq. 34)

Exports volume, \( X \)

Export price, \( p_X \)

Imports volume \( IM \)

Import price, \( p_{IM} \)

Fin. capacity of the RoW % of GDP

Trade balance % of GDP (value)
Fin. accumulation rate (%), firms

Fin. accumulation rate (%), banks

Equity issued by firms (stock), % of GDP

Equity issued by banks (stock), % of GDP

Domestic wealth and (-) RoW, % of GDP (observed)

Domestic wealth and (-) RoW, % of GDP (simulated)

Flow of assets & flow of liabs + adj CB; % of GDP (observed)

Flow of assets & flow of liabs + adj CB; % of GDP (simulated)

Unwritten equation, assets-liabilities BdF (% of GDP)
Scenarios

Figure 2 Scenarios vs baseline (shocks start in 2021)

Baseline series compared to after-shock series (%), simulations start in 2019 solved with Newton’s algorithm

Top left $\rightarrow$ 1% increase in firms’ accumulation rate / 5% increase in household consumption / 5% in wage per worker growth

Top right $\rightarrow$ permanent 1% increase in the interest rate (10 year treasury & ECB rate + 10 year)

Middle left $\rightarrow$ 5% of GDP increase in public investment (permanent + one-shot)

Middle right $\rightarrow$ 5% of GDP increase in helicopter money with public investment (permanent + one-shot) / 5% of GDP recapitalization

Bottom left $\rightarrow$ 15% of GDP public debt cancellation (pure v 5% of GDP increase in public investment)

Bottom right $\rightarrow$ 5% of GDP increase in helicopter money (pure v CB transfer to the government v 5% of GDP increase in public investment v social benefits)
GDP volume, $Y_{\text{shock}} \times 100$
GDP deflator, \( \frac{p_{\text{shock}}}{p_{\text{baseline}}} \times 100 \)
Output gap, $GAP_{shock} - GAP_{baseline}$ (%)
Labor productivity $\left( \frac{\text{vs}_{\text{Hock}}}{\text{vs}_{\text{Baseline}}} \times 100 \right)$
Firms’ investment volume, $\frac{I_{Stock}}{I_{Baseline}} \times 100$
Trade balance, \( \left( \frac{PX_{\text{shock}} X_{\text{shock}} - PM_{\text{shock}} IM_{\text{shock}}}{PX_{\text{baseline}} X_{\text{baseline}} - PM_{\text{baseline}} IM_{\text{baseline}}} \right) \) (%)
Government balance, $\left( \frac{FCN_{\text{Shock}}}{P_Y^{\text{Shock}}} - \frac{FCN_{\text{Baseline}}}{P_Y^{\text{Baseline}}} \right) (%)$
Government debt, \( \frac{P^G_{\text{ho}} \beta^G_{\text{ho}} - P^G_{\text{base}} \beta^G_{\text{base}}}{P^G_{\text{base}} \gamma^G_{\text{base}}} \) (%)