Table 1: Endogenous

| Variable | LaTeX | Description |
|---|---|---|
| r | $r$ | r |
| rk | $rk$ | rk |
| w | $w$ | w |
| b | $b$ | b |
| y | $y$ | y |
| varpi | $varpi$ | varpi |
| s | $s$ | s |
| inv | $inv$ | inv |
| invG | $invG$ | invG |
| c | $c$ | c |
| cw | $cw$ | cw |
| cr | $cr$ | cr |
| tauw | $tauw$ | tauw |
| N | $N$ | N |
| stoyw | $stoyw$ | stoyw |
| PiF | $PiF$ | PiF |
| Tw | $Tw$ | Tw |
| hw | $hw$ | hw |
| Dr | $Dr$ | Dr |
| Dw | $Dw$ | Dw |
| ep | $ep$ | ep |
| varsig | $varsig$ | varsig |
| zetar | $zetar$ | zetar |
| zetay | $zetay$ | zetay |
| gw | $gw$ | gw |
| g | $g$ | g |
| gE | $gE$ | gE |
| iy | $iy$ | iy |
| gpc | $gpc$ | gpc |
| zz | $zz$ | zz |
| far | $far$ | far |
| faw | $faw$ | faw |
| dr | $dr$ | dr |
| dw | $dw$ | dw |
| mu | $mu$ | mu |
| k | $k$ | k |
| u | $u$ | u |
| del | $del$ | del |
| delprime | $delprime$ | delprime |
| gM | $gM$ | gM |
| v | $v$ | v |
| j | $j$ | j |
| lam | $lam$ | lam |
| gA | $gA$ | gA |

Table 1 – Continued

| Variable | LaTeX | Description |
|---|---|---|
| za | $za$ | za |
| PiA | $PiA$ | PiA |
| PiRD | $PiRD$ | PiRD |
| fa | $fa$ | fa |
| n | $n$ | n |
| gn | $gn$ | gn |
| gy | $gy$ | gy |
| gamma | $gamma$ | gamma |
| OMEGAY | $OMEGAY$ | OMEGAY |
| fert | $fert$ | fert |
| psi | $psi$ | psi |
| tauwE | $tauwE$ | tauwE |
| tauwA | $tauwA$ | tauwA |
| ay | $ay$ | ay |
| tpe | $tpe$ | tpe |
| Pe | $Pe$ | Pe |
| he | $he$ | he |
| en | $en$ | en |
| ey | $ey$ | ey |
| er | $er$ | er |
| shockn | $shockn$ | shockn |
| shocky | $shocky$ | shocky |
| shockr | $shockr$ | shockr |
| shareW | $shareW$ | shareW |
| shareR | $shareR$ | shareR |
| AUX_ENDO_LAG_24_1 | $AUX\_ENDO\_LAG\_24\_1$ | AUX_ENDO_LAG_24_1 |
| AUX_ENDO_LAG_35_1 | $AUX\_ENDO\_LAG\_35\_1$ | AUX_ENDO_LAG_35_1 |
| AUX_ENDO_LAG_44_1 | $AUX\_ENDO\_LAG\_44\_1$ | AUX_ENDO_LAG_44_1 |
| AUX_ENDO_LAG_64_1 | $AUX\_ENDO\_LAG\_64\_1$ | AUX_ENDO_LAG_64_1 |
| AUX_ENDO_LAG_64_2 | $AUX\_ENDO\_LAG\_64\_2$ | AUX_ENDO_LAG_64_2 |
| AUX_ENDO_LAG_64_3 | $AUX\_ENDO\_LAG\_64\_3$ | AUX_ENDO_LAG_64_3 |
| AUX_ENDO_LAG_64_4 | $AUX\_ENDO\_LAG\_64\_4$ | AUX_ENDO_LAG_64_4 |
| AUX_ENDO_LAG_64_5 | $AUX\_ENDO\_LAG\_64\_5$ | AUX_ENDO_LAG_64_5 |
| AUX_ENDO_LAG_64_6 | $AUX\_ENDO\_LAG\_64\_6$ | AUX_ENDO_LAG_64_6 |
| AUX_ENDO_LAG_64_7 | $AUX\_ENDO\_LAG\_64\_7$ | AUX_ENDO_LAG_64_7 |
| AUX_ENDO_LAG_64_8 | $AUX\_ENDO\_LAG\_64\_8$ | AUX_ENDO_LAG_64_8 |
| AUX_ENDO_LAG_64_9 | $AUX\_ENDO\_LAG\_64\_9$ | AUX_ENDO_LAG_64_9 |
| AUX_ENDO_LAG_64_10 | $AUX\_ENDO\_LAG\_64\_10$ | AUX_ENDO_LAG_64_10 |
| AUX_ENDO_LAG_64_11 | $AUX\_ENDO\_LAG\_64\_11$ | AUX_ENDO_LAG_64_11 |
| AUX_ENDO_LAG_64_12 | $AUX\_ENDO\_LAG\_64\_12$ | AUX_ENDO_LAG_64_12 |
| AUX_ENDO_LAG_64_13 | $AUX\_ENDO\_LAG\_64\_13$ | AUX_ENDO_LAG_64_13 |
| AUX_ENDO_LAG_64_14 | $AUX\_ENDO\_LAG\_64\_14$ | AUX_ENDO_LAG_64_14 |
| AUX_ENDO_LAG_64_15 | $AUX\_ENDO\_LAG\_64\_15$ | AUX_ENDO_LAG_64_15 |
| AUX_ENDO_LAG_64_16 | $AUX\_ENDO\_LAG\_64\_16$ | AUX_ENDO_LAG_64_16 |
| AUX_ENDO_LAG_64_17 | $AUX\_ENDO\_LAG\_64\_17$ | AUX_ENDO_LAG_64_17 |

Table 1 – Continued

| Variable | LaTeX | Description |
|---|---|---|
| AUX_ENDO_LAG_64_18 | $AUX\_ENDO\_LAG\_64\_18$ | AUX_ENDO_LAG_64_18 |
| AUX_ENDO_LAG_64_19 | $AUX\_ENDO\_LAG\_64\_19$ | AUX_ENDO_LAG_64_19 |
| AUX_ENDO_LAG_64_20 | $AUX\_ENDO\_LAG\_64\_20$ | AUX_ENDO_LAG_64_20 |
| AUX_ENDO_LAG_64_21 | $AUX\_ENDO\_LAG\_64\_21$ | AUX_ENDO_LAG_64_21 |
| AUX_ENDO_LAG_64_22 | $AUX\_ENDO\_LAG\_64\_22$ | AUX_ENDO_LAG_64_22 |
| AUX_ENDO_LAG_64_23 | $AUX\_ENDO\_LAG\_64\_23$ | AUX_ENDO_LAG_64_23 |
| AUX_ENDO_LAG_64_24 | $AUX\_ENDO\_LAG\_64\_24$ | AUX_ENDO_LAG_64_24 |
| AUX_ENDO_LAG_64_25 | $AUX\_ENDO\_LAG\_64\_25$ | AUX_ENDO_LAG_64_25 |
| AUX_ENDO_LAG_64_26 | $AUX\_ENDO\_LAG\_64\_26$ | AUX_ENDO_LAG_64_26 |
| AUX_ENDO_LAG_64_27 | $AUX\_ENDO\_LAG\_64\_27$ | AUX_ENDO_LAG_64_27 |
| AUX_ENDO_LAG_64_28 | $AUX\_ENDO\_LAG\_64\_28$ | AUX_ENDO_LAG_64_28 |
| AUX_EXO_LAG_69_0 | $AUX\_EXO\_LAG\_69\_0$ | AUX_EXO_LAG_69_0 |
| AUX_EXO_LAG_69_1 | $AUX\_EXO\_LAG\_69\_1$ | AUX_EXO_LAG_69_1 |
| AUX_EXO_LAG_69_2 | $AUX\_EXO\_LAG\_69\_2$ | AUX_EXO_LAG_69_2 |
| AUX_EXO_LAG_69_3 | $AUX\_EXO\_LAG\_69\_3$ | AUX_EXO_LAG_69_3 |
| AUX_EXO_LAG_69_4 | $AUX\_EXO\_LAG\_69\_4$ | AUX_EXO_LAG_69_4 |
| AUX_EXO_LAG_69_5 | $AUX\_EXO\_LAG\_69\_5$ | AUX_EXO_LAG_69_5 |
| AUX_EXO_LAG_69_6 | $AUX\_EXO\_LAG\_69\_6$ | AUX_EXO_LAG_69_6 |
| AUX_EXO_LAG_69_7 | $AUX\_EXO\_LAG\_69\_7$ | AUX_EXO_LAG_69_7 |
| AUX_EXO_LAG_69_8 | $AUX\_EXO\_LAG\_69\_8$ | AUX_EXO_LAG_69_8 |
| AUX_EXO_LAG_69_9 | $AUX\_EXO\_LAG\_69\_9$ | AUX_EXO_LAG_69_9 |
| AUX_EXO_LAG_69_10 | $AUX\_EXO\_LAG\_69\_10$ | AUX_EXO_LAG_69_10 |
| AUX_EXO_LAG_69_11 | $AUX\_EXO\_LAG\_69\_11$ | AUX_EXO_LAG_69_11 |
| AUX_EXO_LAG_69_12 | $AUX\_EXO\_LAG\_69\_12$ | AUX_EXO_LAG_69_12 |
| AUX_EXO_LAG_69_13 | $AUX\_EXO\_LAG\_69\_13$ | AUX_EXO_LAG_69_13 |
| AUX_EXO_LAG_69_14 | $AUX\_EXO\_LAG\_69\_14$ | AUX_EXO_LAG_69_14 |
| AUX_EXO_LAG_69_15 | $AUX\_EXO\_LAG\_69\_15$ | AUX_EXO_LAG_69_15 |
| AUX_EXO_LAG_69_16 | $AUX\_EXO\_LAG\_69\_16$ | AUX_EXO_LAG_69_16 |
| AUX_EXO_LAG_69_17 | $AUX\_EXO\_LAG\_69\_17$ | AUX_EXO_LAG_69_17 |
| AUX_EXO_LAG_69_18 | $AUX\_EXO\_LAG\_69\_18$ | AUX_EXO_LAG_69_18 |
| AUX_EXO_LAG_69_19 | $AUX\_EXO\_LAG\_69\_19$ | AUX_EXO_LAG_69_19 |
| AUX_EXO_LAG_69_20 | $AUX\_EXO\_LAG\_69\_20$ | AUX_EXO_LAG_69_20 |
| AUX_EXO_LAG_69_21 | $AUX\_EXO\_LAG\_69\_21$ | AUX_EXO_LAG_69_21 |
| AUX_EXO_LAG_69_22 | $AUX\_EXO\_LAG\_69\_22$ | AUX_EXO_LAG_69_22 |
| AUX_EXO_LAG_69_23 | $AUX\_EXO\_LAG\_69\_23$ | AUX_EXO_LAG_69_23 |
| AUX_EXO_LAG_69_24 | $AUX\_EXO\_LAG\_69\_24$ | AUX_EXO_LAG_69_24 |
| AUX_EXO_LAG_69_25 | $AUX\_EXO\_LAG\_69\_25$ | AUX_EXO_LAG_69_25 |
| AUX_EXO_LAG_69_26 | $AUX\_EXO\_LAG\_69\_26$ | AUX_EXO_LAG_69_26 |
| AUX_EXO_LAG_69_27 | $AUX\_EXO\_LAG\_69\_27$ | AUX_EXO_LAG_69_27 |
| AUX_EXO_LAG_69_28 | $AUX\_EXO\_LAG\_69\_28$ | AUX_EXO_LAG_69_28 |

Table 2: Exogenous

| Variable | LaTeX | Description |
|---|---|---|
| delall | *delall* | delall |

Table 3: Parameters

| Variable | LaTeX | Description |
|---|---|---|
| ZETAYSS | $ZETAYSS$ | ZETAYSS |
| ZETARSS | $ZETARSS$ | ZETARSS |
| SHINNOVW | $SHINNOVW$ | SHINNOVW |
| YINNOVSH | $YINNOVSH$ | YINNOVSH |
| ETAR | $ETAR$ | ETAR |
| DELTAHE | $DELTAHE$ | DELTAHE |
| NP | $NP$ | NP |
| FERTSS | $FERTSS$ | FERTSS |
| RHOYW | $RHOYW$ | RHOYW |
| LAMY | $LAMY$ | LAMY |
| PSISS | $PSISS$ | PSISS |
| GSS | $GSS$ | GSS |
| PERS | $PERS$ | PERS |
| RATIODEL | $RATIODEL$ | RATIODEL |
| OMEGAR | $OMEGAR$ | OMEGAR |
| RHOU | $RHOU$ | RHOU |
| BBETA | $BBETA$ | BBETA |
| ALPHA | $ALPHA$ | ALPHA |
| GAMMAI | $GAMMAI$ | GAMMAI |
| VARNU | $VARNU$ | VARNU |
| BMEGA | $BMEGA$ | BMEGA |
| CHI | $CHI$ | CHI |
| RHO | $RHO$ | RHO |
| PHI | $PHI$ | PHI |
| ELASMU | $ELASMU$ | ELASMU |
| ELASLAM | $ELASLAM$ | ELASLAM |
| DELPRIMESS | $DELPRIMESS$ | DELPRIMESS |
| DELSS | $DELSS$ | DELSS |
| MUSS | $MUSS$ | MUSS |
| LAMSS | $LAMSS$ | LAMSS |
| USS | $USS$ | USS |
| VARPISS | $VARPISS$ | VARPISS |
| ZASS | $ZASS$ | ZASS |
| KSS | $KSS$ | KSS |
| NSS | $NSS$ | NSS |
| GAMMASS | $GAMMASS$ | GAMMASS |
| RHOE | $RHOE$ | RHOE |

Table 3 – Continued

| Variable | LaTeX | Description |
|---|---|---|
| CHIE | $CHIE$ | CHIE |
| drs_1 | $drs\_1$ | drs_1 |
| drs_2 | $drs\_2$ | drs_2 |
| drs_3 | $drs\_3$ | drs_3 |
| drs_4 | $drs\_4$ | drs_4 |
| drs_5 | $drs\_5$ | drs_5 |
| drs_6 | $drs\_6$ | drs_6 |
| drs_7 | $drs\_7$ | drs_7 |
| drs_8 | $drs\_8$ | drs_8 |
| drs_9 | $drs\_9$ | drs_9 |
| drs_10 | $drs\_10$ | drs_10 |
| drs_11 | $drs\_11$ | drs_11 |
| drs_12 | $drs\_12$ | drs_12 |
| drs_13 | $drs\_13$ | drs_13 |
| drs_14 | $drs\_14$ | drs_14 |
| drs_15 | $drs\_15$ | drs_15 |
| drs_16 | $drs\_16$ | drs_16 |
| drs_17 | $drs\_17$ | drs_17 |
| drs_18 | $drs\_18$ | drs_18 |
| drs_19 | $drs\_19$ | drs_19 |
| drs_20 | $drs\_20$ | drs_20 |
| drs_21 | $drs\_21$ | drs_21 |
| drs_22 | $drs\_22$ | drs_22 |
| drs_23 | $drs\_23$ | drs_23 |
| drs_24 | $drs\_24$ | drs_24 |
| drs_25 | $drs\_25$ | drs_25 |
| drs_26 | $drs\_26$ | drs_26 |
| drs_27 | $drs\_27$ | drs_27 |
| drs_28 | $drs\_28$ | drs_28 |
| drs_29 | $drs\_29$ | drs_29 |
| drs_30 | $drs\_30$ | drs_30 |
| dws_1 | $dws\_1$ | dws_1 |
| dws_2 | $dws\_2$ | dws_2 |
| dws_3 | $dws\_3$ | dws_3 |
| dws_4 | $dws\_4$ | dws_4 |
| dws_5 | $dws\_5$ | dws_5 |
| dws_6 | $dws\_6$ | dws_6 |
| dws_7 | $dws\_7$ | dws_7 |
| dws_8 | $dws\_8$ | dws_8 |
| dws_9 | $dws\_9$ | dws_9 |
| dws_10 | $dws\_10$ | dws_10 |
| dws_11 | $dws\_11$ | dws_11 |
| dws_12 | $dws\_12$ | dws_12 |
| dws_13 | $dws\_13$ | dws_13 |
| dws_14 | $dws\_14$ | dws_14 |

Table 3 – Continued

| Variable | LaTeX | Description |
|---|---|---|
| dws_15 | $dws\_15$ | dws_15 |
| dws_16 | $dws\_16$ | dws_16 |
| dws_17 | $dws\_17$ | dws_17 |
| dws_18 | $dws\_18$ | dws_18 |
| dws_19 | $dws\_19$ | dws_19 |
| dws_20 | $dws\_20$ | dws_20 |
| dws_21 | $dws\_21$ | dws_21 |
| dws_22 | $dws\_22$ | dws_22 |
| dws_23 | $dws\_23$ | dws_23 |
| dws_24 | $dws\_24$ | dws_24 |
| dws_25 | $dws\_25$ | dws_25 |
| dws_26 | $dws\_26$ | dws_26 |
| dws_27 | $dws\_27$ | dws_27 |
| dws_28 | $dws\_28$ | dws_28 |
| dws_29 | $dws\_29$ | dws_29 |
| dws_30 | $dws\_30$ | dws_30 |
| gn_1 | $gn\_1$ | gn_1 |
| gn_2 | $gn\_2$ | gn_2 |
| gn_3 | $gn\_3$ | gn_3 |
| gn_4 | $gn\_4$ | gn_4 |
| gn_5 | $gn\_5$ | gn_5 |
| gn_6 | $gn\_6$ | gn_6 |
| gn_7 | $gn\_7$ | gn_7 |
| gn_8 | $gn\_8$ | gn_8 |
| gn_9 | $gn\_9$ | gn_9 |
| gn_10 | $gn\_10$ | gn_10 |
| gn_11 | $gn\_11$ | gn_11 |
| gn_12 | $gn\_12$ | gn_12 |
| gn_13 | $gn\_13$ | gn_13 |
| gn_14 | $gn\_14$ | gn_14 |
| gn_15 | $gn\_15$ | gn_15 |
| gn_16 | $gn\_16$ | gn_16 |
| gn_17 | $gn\_17$ | gn_17 |
| gn_18 | $gn\_18$ | gn_18 |
| gn_19 | $gn\_19$ | gn_19 |
| gn_20 | $gn\_20$ | gn_20 |
| gn_21 | $gn\_21$ | gn_21 |
| gn_22 | $gn\_22$ | gn_22 |
| gn_23 | $gn\_23$ | gn_23 |
| gn_24 | $gn\_24$ | gn_24 |
| gn_25 | $gn\_25$ | gn_25 |
| gn_26 | $gn\_26$ | gn_26 |
| gn_27 | $gn\_27$ | gn_27 |
| gn_28 | $gn\_28$ | gn_28 |
| gn_29 | $gn\_29$ | gn_29 |

Table 3 – Continued

| **Variable** | **LaTeX** | **Description** |
|---|---|---|
| gn_30 | $gn\_30$ | gn_30 |

Table 4: Parameter Values

| **Parameter** | **Value** |
|---|---|
| $ZETAYSS$ | 0.700 |
| $ZETARSS$ | 0.227 |
| $SHINNOVW$ | 0.010 |
| $YINNOVSH$ | 0.059 |
| $ETAR$ | 0.400 |
| $DELTAHE$ | 0.120 |
| $NP$ | 25.000 |
| $FERTSS$ | 0.060 |
| $RHOYW$ | 0.511 |
| $LAMY$ | 0.048 |
| $PSISS$ | 0.667 |
| $GSS$ | 1.046 |
| $PERS$ | 0.900 |
| $RATIODEL$ | 0.333 |
| $OMEGAR$ | 0.975 |
| $RHOU$ | -3.000 |
| $BBETA$ | 0.960 |
| $ALPHA$ | 0.333 |
| $GAMMAI$ | 0.500 |
| $VARNU$ | 1.667 |
| $BMEGA$ | 0.136 |
| $CHI$ | 61.128 |
| $RHO$ | 0.900 |
| $PHI$ | 0.850 |
| $ELASMU$ | -1.000 |
| $ELASLAM$ | 0.829 |
| $DELPRIMESS$ | 0.332 |
| $DELSS$ | 0.080 |
| $MUSS$ | 1.100 |
| $LAMSS$ | 0.100 |
| $USS$ | 0.800 |
| $VARPISS$ | 0.120 |
| $ZASS$ | 3.126 |
| $KSS$ | 0.596 |
| $NSS$ | 1.010 |
| $GAMMASS$ | 0.900 |
| $RHOE$ | 0.900 |
| $CHIE$ | 1689.513 |
| $drs\_1$ | 0.002 |
| $drs\_2$ | 0.003 |
| $drs\_3$ | 0.004 |
| $drs\_4$ | 0.004 |
| $drs\_5$ | 0.004 |

Table 4 – Continued

| **Parameter** | **Value** |
|---|---|
| $drs\_6$ | 0.004 |
| $drs\_7$ | 0.004 |
| $drs\_8$ | 0.004 |
| $drs\_9$ | 0.005 |
| $drs\_10$ | 0.005 |
| $drs\_11$ | 0.005 |
| $drs\_12$ | 0.005 |
| $drs\_13$ | 0.005 |
| $drs\_14$ | 0.005 |
| $drs\_15$ | 0.005 |
| $drs\_16$ | 0.005 |
| $drs\_17$ | 0.004 |
| $drs\_18$ | 0.004 |
| $drs\_19$ | 0.004 |
| $drs\_20$ | 0.003 |
| $drs\_21$ | 0.003 |
| $drs\_22$ | 0.003 |
| $drs\_23$ | 0.002 |
| $drs\_24$ | 0.002 |
| $drs\_25$ | 0.002 |
| $drs\_26$ | 0.001 |
| $drs\_27$ | 0.001 |
| $drs\_28$ | 0.001 |
| $drs\_29$ | 0.001 |
| $drs\_30$ | 0.000 |
| $dws\_1$ | -0.002 |
| $dws\_2$ | -0.002 |
| $dws\_3$ | -0.002 |
| $dws\_4$ | -0.002 |
| $dws\_5$ | -0.002 |
| $dws\_6$ | -0.002 |
| $dws\_7$ | -0.001 |
| $dws\_8$ | -0.001 |
| $dws\_9$ | -0.001 |
| $dws\_10$ | -0.002 |
| $dws\_11$ | -0.002 |
| $dws\_12$ | -0.002 |
| $dws\_13$ | -0.002 |
| $dws\_14$ | -0.002 |
| $dws\_15$ | -0.002 |
| $dws\_16$ | -0.001 |
| $dws\_17$ | -0.001 |
| $dws\_18$ | -0.001 |
| $dws\_19$ | -0.001 |

Table 4 – Continued

| **Parameter** | **Value** |
|---|---|
| $dws\_20$ | -0.000 |
| $dws\_21$ | 0.000 |
| $dws\_22$ | 0.000 |
| $dws\_23$ | 0.001 |
| $dws\_24$ | 0.001 |
| $dws\_25$ | 0.001 |
| $dws\_26$ | 0.001 |
| $dws\_27$ | 0.001 |
| $dws\_28$ | 0.001 |
| $dws\_29$ | 0.001 |
| $dws\_30$ | 0.001 |
| $gn\_1$ | 1.009 |
| $gn\_2$ | 1.009 |
| $gn\_3$ | 1.009 |
| $gn\_4$ | 1.009 |
| $gn\_5$ | 1.008 |
| $gn\_6$ | 1.008 |
| $gn\_7$ | 1.007 |
| $gn\_8$ | 1.007 |
| $gn\_9$ | 1.007 |
| $gn\_10$ | 1.007 |
| $gn\_11$ | 1.005 |
| $gn\_12$ | 1.005 |
| $gn\_13$ | 1.005 |
| $gn\_14$ | 1.004 |
| $gn\_15$ | 1.004 |
| $gn\_16$ | 1.004 |
| $gn\_17$ | 1.003 |
| $gn\_18$ | 1.003 |
| $gn\_19$ | 1.003 |
| $gn\_20$ | 1.003 |
| $gn\_21$ | 1.003 |
| $gn\_22$ | 1.003 |
| $gn\_23$ | 1.003 |
| $gn\_24$ | 1.002 |
| $gn\_25$ | 1.002 |
| $gn\_26$ | 1.002 |
| $gn\_27$ | 1.002 |
| $gn\_28$ | 1.002 |
| $gn\_29$ | 1.002 |
| $gn\_30$ | 1.002 |

$$hw_t = w_t + \frac{OMEGAR}{r_t\, zz_t}\, \frac{g_{t+1}}{gw_t}\, hw_{t+1} \tag{1}$$

$$Tw_t = tauw_t + \frac{OMEGAR}{r_t\, zz_t}\, \frac{g_{t+1}}{gw_t}\, Tw_{t+1} \tag{2}$$

$$Dr_t = dr_t + \frac{g_{t+1}\, Dr_{t+1}\, gamma_t\, zetar_{t-1}}{gw_t\, r_t\, zetar_t} \tag{3}$$

$$ay_t = \frac{1}{NP}\, w_{t-1}\, (1 - OMEGAR) + \frac{\left(1 - \frac{1}{NP}\right)\, ay_{t-1}\, AUX\_ENDO\_LAG\_24\_1_{t-1}}{g_t} \tag{4}$$

$$tpe_t = ay_t\, ETAR + gamma_{t-1}\, \frac{gE_{t-1}}{g_t}\, tpe_{t-1} \tag{5}$$

$$Pe_t = tpe_t + \frac{zetar_{t-1}\, g_{t+1}\, gamma_t\, Pe_{t+1}}{gw_t\, r_t\, zetar_t} \tag{6}$$

$$Dw_t = dw_t + \frac{OMEGAR}{r_t\, zz_t}\, \frac{g_{t+1}}{gw_t}\, Dw_{t+1} + \frac{(1 - OMEGAR)\, ep_{t+1}^{\frac{RHOU-1}{RHOU}}}{r_t\, zz_t}\, \frac{g_{t+1}}{gw_t\, zetar_t}\, (Dr_{t+1} + Pe_{t+1}) \tag{7}$$

$$cw_t = varsig_t\, \left(Dw_t + hw_t + \frac{r_{t-1}\, faw_{t-1}}{g_t} - Tw_t\right) \tag{8}$$

$$cr_t = varsig_t\, ep_t\, \left(Pe_t + Dr_t + \frac{r_{t-1}\, far_{t-1}}{g_t}\right) \tag{9}$$

$$1 - varsig_t\, ep_t = \frac{gamma_t\, (r_t\, BBETA)^{\frac{1}{1-RHOU}}}{r_t}\, \frac{varsig_t\, ep_t}{ep_{t+1}\, varsig_{t+1}} \tag{10}$$

$$1 - varsig_t = \frac{(zz_t\, r_t\, BBETA)^{\frac{1}{1-RHOU}}}{r_t\, zz_t}\, \frac{varsig_t}{varsig_{t+1}} \tag{11}$$

$$zz_t = OMEGAR + (1 - OMEGAR)\, ep_{t+1}^{\frac{RHOU-1}{RHOU}} \tag{12}$$

$$he_t = DELTAHE\, \frac{zetar_{t-1}}{1 + zetar_{t-1} + zetay_{t-1}} \tag{13}$$

$$tauwA_t = tpe_t + he_t \tag{14}$$

$$tauwE_t = w_t\, iy_t \tag{15}$$

$$tauw_t = tauwA_t + tauwE_t \tag{16}$$

$$gw_t = OMEGAR + zetay_{t-1}\ (1 - OMEGAY_t) \tag{17}$$

$$n_t = gw_t\, \frac{zetay_t}{zetay_{t-1}} \tag{18}$$

$$gw_t\, zetar_t = 1 - OMEGAR + gamma_t\, zetar_{t-1} \tag{19}$$

$$gn_t = \left(gw_t\, zetar_t + gw_t + zetay_{t-1}\, n_t\right)\ \left(1 + zetar_{t-1} + zetay_{t-1}\right)^{(-1)} \tag{20}$$

$$gE_t = \frac{OMEGAR + zetay_{t-1}\ (1 - OMEGAY_t)\ \left(RHOE + \frac{CHIE}{2}\, iy_t^2\right)}{gw_t} \tag{21}$$

$$varsig_t^{\frac{(-1)}{RHOU}} = \frac{g_{t+1}\, iy_t\, CHIE\, zetay_{t-1}\ (1 - OMEGAY_t)\ BBETA\, varsig_{t+1}^{\frac{(-1)}{RHOU}}\, w_{t+1}}{w_t\, gw_t} \tag{22}$$

$$fert_t = n_t - OMEGAY_t \tag{23}$$

$$(1 - ALPHA)\ (1 - GAMMAI) = w_t\, mu_t \tag{24}$$

$$ALPHA\ (1 - GAMMAI) = mu_t\ (rk_t + del_t)\ \frac{k_{t-1}}{g_t} \tag{25}$$

$$ALPHA\ (1 - GAMMAI) = \frac{k_{t-1}}{g_t}\, mu_t\, delprime_t\, u_t \tag{26}$$

$$g_t = \frac{mu_t}{mu_{t-1}}\, gM_t\, gA_{t-1}^{1-VARNU} \tag{27}$$

$$g_t \tag{28}$$
$$= gM_t^{GAMMAI}\ \left(gE_{t-1}\, gw_{t-1}\right)^{(1-ALPHA)\,(1-GAMMAI)}\ \frac{N_t^{mu_t-1}}{N_{t-1}^{mu_{t-1}-1}}\ \left(\frac{k_{t-1}\, u_t\, g_{t-1}}{u_{t-1}\, AUX\_ENDO\_LAG\_35\_1_{t-1}}\right)^{ALPHA\,(1-G}$$

$$\frac{mu_t - 1}{mu_t}\, N_t^{(-mu_t)} = BMEGA\, v_t \tag{29}$$

$$mu_t = MUSS\ (1 + ELASMU\ (N_t - 1)) \tag{30}$$

$$del_t = DELSS + delprime_t\ (u_t - USS) \tag{31}$$

$$delprime_t = DELPRIMESS + \frac{(u_t - USS)\ DELPRIMESS\, RATIODEL}{USS} \tag{32}$$

$$invG_t = g_t\, \frac{inv_t}{inv_{t-1}} \tag{33}$$

$$\frac{gA_t\, za_t}{za_{t-1}} = stoyw_t^{RHOYW}\, CHI\, \left(\frac{s_t}{psi_t}\right)^{RHO} + PHI \tag{34}$$

$$stoyw_t = \frac{zetay_{t-1}\ (1 - OMEGAY_t)\ YINNOVSH}{zetar_{t-1} + 1 + zetay_{t-1}} + \frac{OMEGAR\ (1 - LAMY)}{gn_{t-1}}\, stoyw_{t-1} \tag{35}$$

$$gA_t = PHI + PHI\, lam_t\ (za_{t-1} - 1) \tag{36}$$

$$s_t = PHI\, \frac{g_{t+1}}{r_t}\, j_{t+1}\, \left(1 - \frac{za_{t-1}\, PHI}{gA_t\, za_t}\right) \tag{37}$$

$$v_t = \frac{GAMMAI\ \left(1 - \frac{1}{VARNU}\right)}{mu_t} + \frac{g_{t+1}}{gA_t}\, \frac{PHI}{r_t}\, v_{t+1} \tag{38}$$

$$varpi_t = \frac{PHI}{r_t}\, \frac{g_{t+1}}{gA_t}\, za_{t-1}\, lam_t\, ELASLAM\, \left(v_{t+1} - \frac{j_{t+1}}{za_t}\right) \tag{39}$$

$$j_t = \frac{PHI}{r_t}\, za_{t-1}\, \frac{g_{t+1}}{gA_t}\, \left(lam_t\, v_{t+1} + \frac{j_{t+1}\ (1 - lam_t)}{za_t}\right) - varpi_t \tag{40}$$

$$lam_t = LAMSS\, \left(1 + ELASLAM\, \left(\frac{varpi_t - VARPISS}{VARPISS} - \frac{za_{t-1} - ZASS}{ZASS} - \frac{psi_t - PSISS}{PSISS}\right)\right) \tag{41}$$

$$\begin{aligned} PiA_t = {} & \frac{GAMMAI\ \left(1 - \frac{1}{VARNU}\right)}{mu_t} - PHI\, j_t\, \left(1 - \frac{PHI\, AUX\_ENDO\_LAG\_44\_1_{t-1}}{gA_{t-1}\, za_{t-1}}\right) \\ & - \frac{r_{t-1}\, varpi_{t-1}\, \left(1 - \frac{1}{AUX\_ENDO\_LAG\_44\_1_{t-1}}\right)}{g_t} \end{aligned} \tag{42}$$

$$PiRD_t = PHI\, j_t\, \left(1 - \frac{PHI\, AUX\_ENDO\_LAG\_44\_1_{t-1}}{gA_{t-1}\, za_{t-1}}\right) - \frac{r_{t-1}\, s_{t-1}}{g_t} \tag{43}$$

$$psi_t = v_t \tag{44}$$

$$r_t = 1 + rk_{t+1} \tag{45}$$

$$dr_t = \frac{far_{t-1}\, PiF_t}{fa_{t-1}} \tag{46}$$

$$dw_t = \frac{faw_{t-1}\, PiF_t}{fa_{t-1}} + SHINNOVW\ (PiA_t + PiRD_t) \tag{47}$$

$$b_t = s_t + varpi_t \left(1 - \frac{1}{za_{t-1}}\right) \tag{48}$$

$$\begin{aligned} PiF_t = {} & \frac{k_{t-1}}{g_t}\ (1 + rk_t) + \frac{r_{t-1}\, b_{t-1}}{g_t} - \frac{r_{t-1}\, fa_{t-1}}{g_t} - k_t - b_t \\ & + fa_t + (PiA_t + PiRD_t)\ (1 - SHINNOVW) \end{aligned} \tag{49}$$

$$k_t = inv_t + \frac{k_{t-1}}{g_t}\ (1 - del_t) \tag{50}$$

$$y_t = 1 - \frac{GAMMAI}{mu_t\, VARNU} - psi_t\, N_t\, BMEGA \tag{51}$$

$$y_t = he_t + tauwE_t + varpi_t \left(1 - \frac{1}{za_{t-1}}\right) + s_t + inv_t + c_t \tag{52}$$

$$c_t = cw_t + cr_t \tag{53}$$

$$fa_t = b_t + k_t \tag{54}$$

$$far_t = tpe_t + dr_t + \frac{r_{t-1}\, far_{t-1}}{g_t} - cr_t + (1 - OMEGAR)\left(dw_t + w_t + \frac{r_{t-1}\, faw_{t-1}}{g_t} - cw_t - tauw_t\right) \tag{55}$$

$$fa_t = far_t + faw_t \tag{56}$$

$$gpc_t = \frac{g_{t-1}\, \frac{y_t}{y_{t-1}}}{gn_{t-1}} \tag{57}$$

$$gy_t = g_t\, \frac{y_t}{y_{t-1}} \tag{58}$$

$$gn_t = NSS + en_t \tag{59}$$

$$shareW_t = \frac{1}{zetar_t + 1 + zetay_t} \tag{60}$$

$$shareR_t = \frac{zetar_t}{zetar_t + 1 + zetay_t} \tag{61}$$

$$\frac{1}{zetar_t + 1 + zetay_t} = \frac{1}{1 + ZETAYSS + ZETARSS} + ey_t \tag{62}$$

$$\frac{zetar_t}{zetar_t + 1 + zetay_t} = \frac{ZETARSS}{1 + ZETAYSS + ZETARSS} + er_t \tag{63}$$

$$\begin{aligned}
en_t = {} & shockn_t\ (gn_1 - NSS) + shockn_{t-1}\ (gn_2 - NSS) \\
& + (gn_3 - NSS)\ AUX_ENDO_LAG_64_1_{t-1} + (gn_4 - NSS)\ AUX_ENDO_LAG_64_2_{t-1} \\
& + (gn_5 - NSS)\ AUX_ENDO_LAG_64_3_{t-1} + (gn_6 - NSS)\ AUX_ENDO_LAG_64_4_{t-1} \\
& + (gn_7 - NSS)\ AUX_ENDO_LAG_64_5_{t-1} + (gn_8 - NSS)\ AUX_ENDO_LAG_64_6_{t-1} \\
& + (gn_9 - NSS)\ AUX_ENDO_LAG_64_7_{t-1} + (gn_10 - NSS)\ AUX_ENDO_LAG_64_8_{t-1} \\
& + (gn_11 - NSS)\ AUX_ENDO_LAG_64_9_{t-1} \\
& + (gn_12 - NSS)\ AUX_ENDO_LAG_64_10_{t-1} \\
& + (gn_13 - NSS)\ AUX_ENDO_LAG_64_11_{t-1} \\
& + (gn_14 - NSS)\ AUX_ENDO_LAG_64_12_{t-1} \\
& + (gn_15 - NSS)\ AUX_ENDO_LAG_64_13_{t-1} \\
& + (gn_16 - NSS)\ AUX_ENDO_LAG_64_14_{t-1} \\
& + (gn_17 - NSS)\ AUX_ENDO_LAG_64_15_{t-1} \\
& + (gn_18 - NSS)\ AUX_ENDO_LAG_64_16_{t-1} \\
& + (gn_19 - NSS)\ AUX_ENDO_LAG_64_17_{t-1} \\
& + (gn_20 - NSS)\ AUX_ENDO_LAG_64_18_{t-1} \\
& + (gn_21 - NSS)\ AUX_ENDO_LAG_64_19_{t-1} \\
& + (gn_22 - NSS)\ AUX_ENDO_LAG_64_20_{t-1} \\
& + (gn_23 - NSS)\ AUX_ENDO_LAG_64_21_{t-1} \\
& + (gn_24 - NSS)\ AUX_ENDO_LAG_64_22_{t-1} \\
& + (gn_25 - NSS)\ AUX_ENDO_LAG_64_23_{t-1} \\
& + (gn_26 - NSS)\ AUX_ENDO_LAG_64_24_{t-1} \\
& + (gn_27 - NSS)\ AUX_ENDO_LAG_64_25_{t-1} \\
& + (gn_28 - NSS)\ AUX_ENDO_LAG_64_26_{t-1} \\
& + (gn_29 - NSS)\ AUX_ENDO_LAG_64_27_{t-1} \\
& + (gn_30 - NSS)\ AUX_ENDO_LAG_64_28_{t-1}
\end{aligned} \tag{64}$$

$$er_t = shockr_t \tag{65}$$

$$ey_t = shocky_t \tag{66}$$

$$
\begin{aligned}
shocky_t = {} & shocky_{t-1} + delall_t\, dws\_1 + dws\_2\, AUX\_EXO\_LAG\_69\_0_{t-1} \\
& + dws\_3\, AUX\_EXO\_LAG\_69\_1_{t-1} + dws\_4\, AUX\_EXO\_LAG\_69\_2_{t-1} \\
& + dws\_5\, AUX\_EXO\_LAG\_69\_3_{t-1} + dws\_6\, AUX\_EXO\_LAG\_69\_4_{t-1} \\
& + dws\_7\, AUX\_EXO\_LAG\_69\_5_{t-1} + dws\_8\, AUX\_EXO\_LAG\_69\_6_{t-1} \\
& + dws\_9\, AUX\_EXO\_LAG\_69\_7_{t-1} + dws\_10\, AUX\_EXO\_LAG\_69\_8_{t-1} \\
& + dws\_11\, AUX\_EXO\_LAG\_69\_9_{t-1} + dws\_12\, AUX\_EXO\_LAG\_69\_10_{t-1} \\
& + dws\_13\, AUX\_EXO\_LAG\_69\_11_{t-1} + dws\_14\, AUX\_EXO\_LAG\_69\_12_{t-1} \\
& + dws\_15\, AUX\_EXO\_LAG\_69\_13_{t-1} + dws\_16\, AUX\_EXO\_LAG\_69\_14_{t-1} \\
& + dws\_17\, AUX\_EXO\_LAG\_69\_15_{t-1} + dws\_18\, AUX\_EXO\_LAG\_69\_16_{t-1} \\
& + dws\_19\, AUX\_EXO\_LAG\_69\_17_{t-1} + dws\_20\, AUX\_EXO\_LAG\_69\_18_{t-1} \\
& + dws\_21\, AUX\_EXO\_LAG\_69\_19_{t-1} + dws\_22\, AUX\_EXO\_LAG\_69\_20_{t-1} \\
& + dws\_23\, AUX\_EXO\_LAG\_69\_21_{t-1} + dws\_24\, AUX\_EXO\_LAG\_69\_22_{t-1} \\
& + dws\_25\, AUX\_EXO\_LAG\_69\_23_{t-1} + dws\_26\, AUX\_EXO\_LAG\_69\_24_{t-1} \\
& + dws\_27\, AUX\_EXO\_LAG\_69\_25_{t-1} + dws\_28\, AUX\_EXO\_LAG\_69\_26_{t-1} \\
& + dws\_29\, AUX\_EXO\_LAG\_69\_27_{t-1} + dws\_30\, AUX\_EXO\_LAG\_69\_28_{t-1}
\end{aligned} \tag{67}
$$

$$
\begin{aligned}
shockr_t = {} & delall_t\, dws\_1 + shockr_{t-1} + drs\_2\, AUX\_EXO\_LAG\_69\_0_{t-1} \\
& + drs\_3\, AUX\_EXO\_LAG\_69\_1_{t-1} + drs\_4\, AUX\_EXO\_LAG\_69\_2_{t-1} \\
& + drs\_5\, AUX\_EXO\_LAG\_69\_3_{t-1} + drs\_6\, AUX\_EXO\_LAG\_69\_4_{t-1} \\
& + drs\_7\, AUX\_EXO\_LAG\_69\_5_{t-1} + drs\_8\, AUX\_EXO\_LAG\_69\_6_{t-1} \\
& + drs\_9\, AUX\_EXO\_LAG\_69\_7_{t-1} + drs\_10\, AUX\_EXO\_LAG\_69\_8_{t-1} \\
& + drs\_11\, AUX\_EXO\_LAG\_69\_9_{t-1} + drs\_12\, AUX\_EXO\_LAG\_69\_10_{t-1} \\
& + drs\_13\, AUX\_EXO\_LAG\_69\_11_{t-1} + drs\_14\, AUX\_EXO\_LAG\_69\_12_{t-1} \\
& + drs\_15\, AUX\_EXO\_LAG\_69\_13_{t-1} + drs\_16\, AUX\_EXO\_LAG\_69\_14_{t-1} \\
& + drs\_17\, AUX\_EXO\_LAG\_69\_15_{t-1} + drs\_18\, AUX\_EXO\_LAG\_69\_16_{t-1} \\
& + drs\_19\, AUX\_EXO\_LAG\_69\_17_{t-1} + drs\_20\, AUX\_EXO\_LAG\_69\_18_{t-1} \\
& + drs\_21\, AUX\_EXO\_LAG\_69\_19_{t-1} + drs\_22\, AUX\_EXO\_LAG\_69\_20_{t-1} \\
& + drs\_23\, AUX\_EXO\_LAG\_69\_21_{t-1} + drs\_24\, AUX\_EXO\_LAG\_69\_22_{t-1} \\
& + drs\_25\, AUX\_EXO\_LAG\_69\_23_{t-1} + drs\_26\, AUX\_EXO\_LAG\_69\_24_{t-1} \\
& + drs\_27\, AUX\_EXO\_LAG\_69\_25_{t-1} + drs\_28\, AUX\_EXO\_LAG\_69\_26_{t-1} \\
& + drs\_29\, AUX\_EXO\_LAG\_69\_27_{t-1} + drs\_30\, AUX\_EXO\_LAG\_69\_28_{t-1}
\end{aligned} \tag{68}
$$

$$
shockn_t = delall_t \tag{69}
$$

$$
AUX\_ENDO\_LAG\_24\_1_t = gw_{t-1} \tag{70}
$$

$$
AUX\_ENDO\_LAG\_35\_1_t = k_{t-1} \tag{71}
$$

$$
AUX\_ENDO\_LAG\_44\_1_t = za_{t-1} \tag{72}
$$

$$
AUX\_ENDO\_LAG\_64\_1_t = shockn_{t-1} \tag{73}
$$

$$
AUX\_ENDO\_LAG\_64\_2_t = AUX\_ENDO\_LAG\_64\_1_{t-1} \tag{74}
$$

$$AUX\_ENDO\_LAG\_64\_3_t = AUX\_ENDO\_LAG\_64\_2_{t-1} \tag{75}$$

$$AUX\_ENDO\_LAG\_64\_4_t = AUX\_ENDO\_LAG\_64\_3_{t-1} \tag{76}$$

$$AUX\_ENDO\_LAG\_64\_5_t = AUX\_ENDO\_LAG\_64\_4_{t-1} \tag{77}$$

$$AUX\_ENDO\_LAG\_64\_6_t = AUX\_ENDO\_LAG\_64\_5_{t-1} \tag{78}$$

$$AUX\_ENDO\_LAG\_64\_7_t = AUX\_ENDO\_LAG\_64\_6_{t-1} \tag{79}$$

$$AUX\_ENDO\_LAG\_64\_8_t = AUX\_ENDO\_LAG\_64\_7_{t-1} \tag{80}$$

$$AUX\_ENDO\_LAG\_64\_9_t = AUX\_ENDO\_LAG\_64\_8_{t-1} \tag{81}$$

$$AUX\_ENDO\_LAG\_64\_10_t = AUX\_ENDO\_LAG\_64\_9_{t-1} \tag{82}$$

$$AUX\_ENDO\_LAG\_64\_11_t = AUX\_ENDO\_LAG\_64\_10_{t-1} \tag{83}$$

$$AUX\_ENDO\_LAG\_64\_12_t = AUX\_ENDO\_LAG\_64\_11_{t-1} \tag{84}$$

$$AUX\_ENDO\_LAG\_64\_13_t = AUX\_ENDO\_LAG\_64\_12_{t-1} \tag{85}$$

$$AUX\_ENDO\_LAG\_64\_14_t = AUX\_ENDO\_LAG\_64\_13_{t-1} \tag{86}$$

$$AUX\_ENDO\_LAG\_64\_15_t = AUX\_ENDO\_LAG\_64\_14_{t-1} \tag{87}$$

$$AUX\_ENDO\_LAG\_64\_16_t = AUX\_ENDO\_LAG\_64\_15_{t-1} \tag{88}$$

$$AUX\_ENDO\_LAG\_64\_17_t = AUX\_ENDO\_LAG\_64\_16_{t-1} \tag{89}$$

$$AUX\_ENDO\_LAG\_64\_18_t = AUX\_ENDO\_LAG\_64\_17_{t-1} \tag{90}$$

$$AUX\_ENDO\_LAG\_64\_19_t = AUX\_ENDO\_LAG\_64\_18_{t-1} \tag{91}$$

$$AUX\_ENDO\_LAG\_64\_20_t = AUX\_ENDO\_LAG\_64\_19_{t-1} \tag{92}$$

$$AUX\_ENDO\_LAG\_64\_21_t = AUX\_ENDO\_LAG\_64\_20_{t-1} \tag{93}$$

$$AUX\_ENDO\_LAG\_64\_22_t = AUX\_ENDO\_LAG\_64\_21_{t-1} \tag{94}$$

$$AUX\_ENDO\_LAG\_64\_23_t = AUX\_ENDO\_LAG\_64\_22_{t-1} \tag{95}$$

$$AUX\_ENDO\_LAG\_64\_24_t = AUX\_ENDO\_LAG\_64\_23_{t-1} \tag{96}$$

$$AUX\_ENDO\_LAG\_64\_25_t = AUX\_ENDO\_LAG\_64\_24_{t-1} \tag{97}$$

$$AUX\_ENDO\_LAG\_64\_26_t = AUX\_ENDO\_LAG\_64\_25_{t-1} \tag{98}$$

$$AUX\_ENDO\_LAG\_64\_27_t = AUX\_ENDO\_LAG\_64\_26_{t-1} \tag{99}$$

$$AUX\_ENDO\_LAG\_64\_28_t = AUX\_ENDO\_LAG\_64\_27_{t-1} \tag{100}$$

$$AUX\_EXO\_LAG\_69\_0_t = delall_t \tag{101}$$

$$AUX\_EXO\_LAG\_69\_1_t = AUX\_EXO\_LAG\_69\_0_{t-1} \tag{102}$$

$$AUX\_EXO\_LAG\_69\_2_t = AUX\_EXO\_LAG\_69\_1_{t-1} \tag{103}$$

$$AUX\_EXO\_LAG\_69\_3_t = AUX\_EXO\_LAG\_69\_2_{t-1} \tag{104}$$

$$AUX\_EXO\_LAG\_69\_4_t = AUX\_EXO\_LAG\_69\_3_{t-1} \tag{105}$$

$$AUX\_EXO\_LAG\_69\_5_t = AUX\_EXO\_LAG\_69\_4_{t-1} \tag{106}$$

$$AUX\_EXO\_LAG\_69\_6_t = AUX\_EXO\_LAG\_69\_5_{t-1} \tag{107}$$

$$AUX\_EXO\_LAG\_69\_7_t = AUX\_EXO\_LAG\_69\_6_{t-1} \tag{108}$$

$$AUX\_EXO\_LAG\_69\_8_t = AUX\_EXO\_LAG\_69\_7_{t-1} \tag{109}$$

$$AUX\_EXO\_LAG\_69\_9_t = AUX\_EXO\_LAG\_69\_8_{t-1} \tag{110}$$

$$AUX\_EXO\_LAG\_69\_10_t = AUX\_EXO\_LAG\_69\_9_{t-1} \tag{111}$$

$$AUX\_EXO\_LAG\_69\_11_t = AUX\_EXO\_LAG\_69\_10_{t-1} \tag{112}$$

$$AUX\_EXO\_LAG\_69\_12_t = AUX\_EXO\_LAG\_69\_11_{t-1} \tag{113}$$

$$AUX\_EXO\_LAG\_69\_13_t = AUX\_EXO\_LAG\_69\_12_{t-1} \tag{114}$$

$$AUX\_EXO\_LAG\_69\_14_t = AUX\_EXO\_LAG\_69\_13_{t-1} \quad (115)$$

$$AUX\_EXO\_LAG\_69\_15_t = AUX\_EXO\_LAG\_69\_14_{t-1} \quad (116)$$

$$AUX\_EXO\_LAG\_69\_16_t = AUX\_EXO\_LAG\_69\_15_{t-1} \quad (117)$$

$$AUX\_EXO\_LAG\_69\_17_t = AUX\_EXO\_LAG\_69\_16_{t-1} \quad (118)$$

$$AUX\_EXO\_LAG\_69\_18_t = AUX\_EXO\_LAG\_69\_17_{t-1} \quad (119)$$

$$AUX\_EXO\_LAG\_69\_19_t = AUX\_EXO\_LAG\_69\_18_{t-1} \quad (120)$$

$$AUX\_EXO\_LAG\_69\_20_t = AUX\_EXO\_LAG\_69\_19_{t-1} \quad (121)$$

$$AUX\_EXO\_LAG\_69\_21_t = AUX\_EXO\_LAG\_69\_20_{t-1} \quad (122)$$

$$AUX\_EXO\_LAG\_69\_22_t = AUX\_EXO\_LAG\_69\_21_{t-1} \quad (123)$$

$$AUX\_EXO\_LAG\_69\_23_t = AUX\_EXO\_LAG\_69\_22_{t-1} \quad (124)$$

$$AUX\_EXO\_LAG\_69\_24_t = AUX\_EXO\_LAG\_69\_23_{t-1} \quad (125)$$

$$AUX\_EXO\_LAG\_69\_25_t = AUX\_EXO\_LAG\_69\_24_{t-1} \quad (126)$$

$$AUX\_EXO\_LAG\_69\_26_t = AUX\_EXO\_LAG\_69\_25_{t-1} \quad (127)$$

$$AUX\_EXO\_LAG\_69\_27_t = AUX\_EXO\_LAG\_69\_26_{t-1} \quad (128)$$

$$AUX\_EXO\_LAG\_69\_28_t = AUX\_EXO\_LAG\_69\_27_{t-1} \quad (129)$$