

Table 1: Endogenous

Variable	LaTeX	Description
gdpratio	\mathfrak{G}	Home GDP / Foreign GDP
FB	\mathfrak{F}	Net foreign Bond of Home country / GDP
r	r	Home real interest rate
rk	r^k	Home capital rent
w	w	labor income / GDP
b	b	investment of R&D and adoption / GDP
y	y	disposable income / GDP
varpi	ϖ	adoption investment X number of new ideas / GDP
s	s	R&D investment / GDP
inv	i	fixed capital investment / GDP
invG	g^i	fixed capital investment growth
c	c	consumption / GDP
cw	c^w	consumption of worker / GDP
cr	c^r	consumption of retiree / GDP
tauw	$\tilde{\tau}$	health care, pension, education cost / GDP
N	N^f	number of input firms
stoyw	γ^{yw}	share of R&D worker
PiF	π^F	profits of financial intermediary / GDP
Tw	\tilde{T}^w	present value of education, health, pension / GDP
hw	h^w	present value of workers labor income / GDP
Dr	\tilde{D}^r	present value of retirees dividends / GDP
Dw	\tilde{D}^w	present value of workers dividends / GDP
ep	ϵ	retiree MPC adjustment factor
varsig	ς	MPC of worker
zetar	ζ^r	retirees / workers
zetay	ζ^y	youth / workers
gw	g^w	growth rate of workers
g	g	growth rate of GDP
gE	g^ξ	growth rate of average effective unit of labor
iy	i^y	education investment / average effective unit of labor
gpc	g_{dypc}	disposable income per capita growth
zz	\mathfrak{Z}	local variable for symbolic brevity
far	fa^r	financial assets of retirees / GDP
faw	fa^w	financial assets of workers / GDP
dr	\tilde{d}^r	dividends of retirees / GDP
dw	\tilde{d}^w	dividends of workers / GDP
mu	μ	markup of input firms
k	k	aggregate fixed capital / GDP
u	u	capital utilization rate
del	δ	depreciation rate
delprime	δ'	differentiation of depreciation rate
gM	g^M	growth rate of aggregate intermediate composite goods
v	v	aggregate value of adopted goods / GDP
j	j	aggregate value of new ideas / GDP

Table 1 – Continued

Variable	L ^A T _E X	Description
lam	λ	probability of success of adoption investment
gA	g^A	growth rate of adopted goods
za	z^a	number of aggregate new ideas / number of adopted goods
PiA	π^A	profits for adpoters / GDP
PiRD	π^{RD}	profits for R&D sector
fa	fa	aggregate financial assets / GDP
n	n	growth rate of young population
gn	g^n	growth rate of total population
gy	g^y	growth rate of disposable income
gamma	γ	probability of retiree survival rate
OMEGAY	ω^y	probability of staying young
fert	$fert$	fertility
psi	ψ	operation cost / GDP
tauwE	$\tilde{\tau}^E$	education cost / GDP
tauwA	$\tilde{\tau}^A$	pension and health care cost / GDP
ay	ay	average labor income / GDP
tpe	tpe	total payment of pensions / GDP
Pe	Pe	present value of life long pension for retirees / GDP
he	he	aggregate health expenditure / GDP
en	en	population growth shock
ey	ey	share of workers shock
er	er	share of retirees shock
shockn	$shockn$	sequence of population shocks
shocky	$shocky$	sequence of share of workers shocks
shockr	$shockr$	sequence of share of retirees shocks
shareW	$shareW$	workers / population
shareR	$shareR$	retirees / population
r_star	r^*	foreign real interest rate
rk_star	r^{k*}	foreign capital rent
w_star	w^*	labor income / GDP
b_star	b^*	investment of R&D and adoption / GDP
y_star	y^*	disposable income / GDP
varpi_star	ϖ^*	adoption investment X number of new ideas / GDP
s_star	s^*	R&D investment / GDP
inv_star	i^*	fixed capital investment / GDP
invG_star	g^{i*}	fixed capital investment growth
c_star	c^*	consumption / GDP
cw_star	c^{w*}	consumption of worker / GDP
cr_star	c^{r*}	consumption of retiree / GDP
tauw_star	$\tilde{\tau}^*$	health care, pension, education cost / GDP
N_star	N^{f*}	number of input firms
stoyw_star	γ^{yw*}	share of R&D worker
PiF_star	π^{F*}	profits of financial intermediary / GDP
Tw_star	\tilde{T}^{w*}	present value of education, health, pension / GDP

Table 1 – Continued

Variable	\LaTeX	Description
hw_star	h^{w*}	present value of workers labor income / GDP
Dr_star	\tilde{D}^{r*}	present value of retirees dividends / GDP
Dw_star	\tilde{D}^{w*}	present value of workers dividends / GDP
ep_star	ϵ^*	retiree MPC adjustment factor
varsig_star	ς^*	MPC of worker
zetar_star	ζ^{r*}	retirees / workers
zetay_star	ζ^{y*}	youth / workers
gw_star	g^{w*}	growth rate of workers
g_star	g^*	growth rate of GDP
gE_star	$g^{\xi*}$	growth rate of average effective unit of labor
iy_star	i^{y*}	education investment / average effective unit of labor
gpc_star	g_{dy}^{pc}	disposable income per capita growth
zz_star	\mathfrak{Z}^*	local variable for symbolic brevity
far_star	fa^{r*}	financial assets of retirees / GDP
faw_star	fa^{w*}	financial assets of workers / GDP
dr_star	\tilde{d}^{r*}	dividends of retirees / GDP
dw_star	\tilde{d}^{w*}	dividends of workers / GDP
mu_star	μ^*	markup of input firms
k_star	k^*	aggregate fixed capital / GDP
u_star	u^*	capital utilization rate
del_star	δ^*	depreciation rate
delprime_star	δ'^*	differentiation of depreciation rate
gM_star	g^M	growth rate of aggregate intermediate composite goods
v_star	v^*	aggregate value of adopted goods / GDP
j_star	j^*	aggregate value of new ideas / GDP
lam_star	λ^*	probability of success of adoption investment
gA_star	g^A	growth rate of adopted goods
za_star	z^a	number of aggregate new ideas / number of adopted goods
PiA_star	π^A	profits for adpoters / GDP
PiRD_star	π^{RD}	profits for R&D sector
fa_star	fa^*	aggregate financial assets / GDP
n_star	n^*	growth rate of young population
gn_star	g^n	growth rate of total population
gy_star	g^y	growth rate of disposable income
gamma_star	γ^*	probability of retiree survival rate
OMEGAY_star	ω^{y*}	probability of staying young
fert_star	$fert^*$	fertility
psi_star	ψ^*	operation cost / GDP
tauwE_star	$\tilde{\tau}^E$	education cost / GDP
tauwA_star	$\tilde{\tau}^A$	pension and health care cost / GDP
ay_star	ay^*	average labor income / GDP
tpe_star	tpe^*	total payment of pensions / GDP
Pe_star	Pe^*	present value of life long pension for retirees / GDP
he_star	he^*	aggregate health expenditure / GDP

Table 1 – Continued

Variable	\LaTeX	Description
en_star	en^*	population growth shock
ey_star	ey^*	share of workers shock
er_star	er^*	share of retirees shock
shockn_star	$shockn^*$	sequence of population shocks
shocky_star	$shocky^*$	sequence of share of workers shocks
shockr_star	$shockr^*$	sequence of share of retirees shocks
shareW_star	$shareW^*$	workers / population
shareR_star	$shareR^*$	retirees / population
AUX_ENDO_LAG_26_1	$AUX_ENDO_LAG_{26_1}$	AUX_ENDO_LAG_26_1
AUX_ENDO_LAG_37_1	$AUX_ENDO_LAG_{37_1}$	AUX_ENDO_LAG_37_1
AUX_ENDO_LAG_46_1	$AUX_ENDO_LAG_{46_1}$	AUX_ENDO_LAG_46_1
AUX_ENDO_LAG_66_1	$AUX_ENDO_LAG_{66_1}$	AUX_ENDO_LAG_66_1
AUX_ENDO_LAG_66_2	$AUX_ENDO_LAG_{66_2}$	AUX_ENDO_LAG_66_2
AUX_ENDO_LAG_66_3	$AUX_ENDO_LAG_{66_3}$	AUX_ENDO_LAG_66_3
AUX_ENDO_LAG_66_4	$AUX_ENDO_LAG_{66_4}$	AUX_ENDO_LAG_66_4
AUX_ENDO_LAG_66_5	$AUX_ENDO_LAG_{66_5}$	AUX_ENDO_LAG_66_5
AUX_ENDO_LAG_66_6	$AUX_ENDO_LAG_{66_6}$	AUX_ENDO_LAG_66_6
AUX_ENDO_LAG_66_7	$AUX_ENDO_LAG_{66_7}$	AUX_ENDO_LAG_66_7
AUX_ENDO_LAG_66_8	$AUX_ENDO_LAG_{66_8}$	AUX_ENDO_LAG_66_8
AUX_ENDO_LAG_66_9	$AUX_ENDO_LAG_{66_9}$	AUX_ENDO_LAG_66_9
AUX_ENDO_LAG_66_10	$AUX_ENDO_LAG_{66_{10}}$	AUX_ENDO_LAG_66_10
AUX_ENDO_LAG_66_11	$AUX_ENDO_LAG_{66_{11}}$	AUX_ENDO_LAG_66_11
AUX_ENDO_LAG_66_12	$AUX_ENDO_LAG_{66_{12}}$	AUX_ENDO_LAG_66_12
AUX_ENDO_LAG_66_13	$AUX_ENDO_LAG_{66_{13}}$	AUX_ENDO_LAG_66_13
AUX_ENDO_LAG_66_14	$AUX_ENDO_LAG_{66_{14}}$	AUX_ENDO_LAG_66_14
AUX_ENDO_LAG_66_15	$AUX_ENDO_LAG_{66_{15}}$	AUX_ENDO_LAG_66_15
AUX_ENDO_LAG_66_16	$AUX_ENDO_LAG_{66_{16}}$	AUX_ENDO_LAG_66_16
AUX_ENDO_LAG_66_17	$AUX_ENDO_LAG_{66_{17}}$	AUX_ENDO_LAG_66_17
AUX_ENDO_LAG_66_18	$AUX_ENDO_LAG_{66_{18}}$	AUX_ENDO_LAG_66_18
AUX_ENDO_LAG_66_19	$AUX_ENDO_LAG_{66_{19}}$	AUX_ENDO_LAG_66_19
AUX_ENDO_LAG_66_20	$AUX_ENDO_LAG_{66_{20}}$	AUX_ENDO_LAG_66_20
AUX_ENDO_LAG_66_21	$AUX_ENDO_LAG_{66_{21}}$	AUX_ENDO_LAG_66_21
AUX_ENDO_LAG_66_22	$AUX_ENDO_LAG_{66_{22}}$	AUX_ENDO_LAG_66_22
AUX_ENDO_LAG_66_23	$AUX_ENDO_LAG_{66_{23}}$	AUX_ENDO_LAG_66_23
AUX_ENDO_LAG_66_24	$AUX_ENDO_LAG_{66_{24}}$	AUX_ENDO_LAG_66_24
AUX_ENDO_LAG_66_25	$AUX_ENDO_LAG_{66_{25}}$	AUX_ENDO_LAG_66_25
AUX_ENDO_LAG_66_26	$AUX_ENDO_LAG_{66_{26}}$	AUX_ENDO_LAG_66_26
AUX_ENDO_LAG_66_27	$AUX_ENDO_LAG_{66_{27}}$	AUX_ENDO_LAG_66_27
AUX_ENDO_LAG_66_28	$AUX_ENDO_LAG_{66_{28}}$	AUX_ENDO_LAG_66_28
AUX_ENDO_LAG_66_29	$AUX_ENDO_LAG_{66_{29}}$	AUX_ENDO_LAG_66_29
AUX_ENDO_LAG_66_30	$AUX_ENDO_LAG_{66_{30}}$	AUX_ENDO_LAG_66_30
AUX_ENDO_LAG_66_31	$AUX_ENDO_LAG_{66_{31}}$	AUX_ENDO_LAG_66_31
AUX_ENDO_LAG_66_32	$AUX_ENDO_LAG_{66_{32}}$	AUX_ENDO_LAG_66_32
AUX_ENDO_LAG_66_33	$AUX_ENDO_LAG_{66_{33}}$	AUX_ENDO_LAG_66_33
AUX_ENDO_LAG_66_34	$AUX_ENDO_LAG_{66_{34}}$	AUX_ENDO_LAG_66_34

Table 1 – Continued

Variable	\LaTeX	Description
AUX_ENDO_LAG_66_35	<i>AUX_ENDO_LAG_66_35</i>	AUX_ENDO_LAG_66_35
AUX_ENDO_LAG_66_36	<i>AUX_ENDO_LAG_66_36</i>	AUX_ENDO_LAG_66_36
AUX_ENDO_LAG_66_37	<i>AUX_ENDO_LAG_66_37</i>	AUX_ENDO_LAG_66_37
AUX_ENDO_LAG_66_38	<i>AUX_ENDO_LAG_66_38</i>	AUX_ENDO_LAG_66_38
AUX_ENDO_LAG_95_1	<i>AUX_ENDO_LAG_95_1</i>	AUX_ENDO_LAG_95_1
AUX_ENDO_LAG_106_1	<i>AUX_ENDO_LAG_106_1</i>	AUX_ENDO_LAG_106_1
AUX_ENDO_LAG_115_1	<i>AUX_ENDO_LAG_115_1</i>	AUX_ENDO_LAG_115_1
AUX_ENDO_LAG_27_1	<i>AUX_ENDO_LAG_27_1</i>	AUX_ENDO_LAG_27_1
AUX_ENDO_LAG_96_1	<i>AUX_ENDO_LAG_96_1</i>	AUX_ENDO_LAG_96_1
AUX_ENDO_LAG_27_2	<i>AUX_ENDO_LAG_27_2</i>	AUX_ENDO_LAG_27_2
AUX_ENDO_LAG_96_2	<i>AUX_ENDO_LAG_96_2</i>	AUX_ENDO_LAG_96_2
AUX_ENDO_LAG_27_3	<i>AUX_ENDO_LAG_27_3</i>	AUX_ENDO_LAG_27_3
AUX_ENDO_LAG_96_3	<i>AUX_ENDO_LAG_96_3</i>	AUX_ENDO_LAG_96_3
AUX_ENDO_LAG_27_4	<i>AUX_ENDO_LAG_27_4</i>	AUX_ENDO_LAG_27_4
AUX_ENDO_LAG_96_4	<i>AUX_ENDO_LAG_96_4</i>	AUX_ENDO_LAG_96_4
AUX_ENDO_LAG_27_5	<i>AUX_ENDO_LAG_27_5</i>	AUX_ENDO_LAG_27_5
AUX_ENDO_LAG_96_5	<i>AUX_ENDO_LAG_96_5</i>	AUX_ENDO_LAG_96_5
AUX_ENDO_LAG_27_6	<i>AUX_ENDO_LAG_27_6</i>	AUX_ENDO_LAG_27_6
AUX_ENDO_LAG_96_6	<i>AUX_ENDO_LAG_96_6</i>	AUX_ENDO_LAG_96_6
AUX_ENDO_LAG_27_7	<i>AUX_ENDO_LAG_27_7</i>	AUX_ENDO_LAG_27_7
AUX_ENDO_LAG_96_7	<i>AUX_ENDO_LAG_96_7</i>	AUX_ENDO_LAG_96_7
AUX_ENDO_LAG_27_8	<i>AUX_ENDO_LAG_27_8</i>	AUX_ENDO_LAG_27_8
AUX_ENDO_LAG_96_8	<i>AUX_ENDO_LAG_96_8</i>	AUX_ENDO_LAG_96_8
AUX_ENDO_LAG_27_9	<i>AUX_ENDO_LAG_27_9</i>	AUX_ENDO_LAG_27_9
AUX_ENDO_LAG_96_9	<i>AUX_ENDO_LAG_96_9</i>	AUX_ENDO_LAG_96_9
AUX_ENDO_LAG_27_10	<i>AUX_ENDO_LAG_27_10</i>	AUX_ENDO_LAG_27_10
AUX_ENDO_LAG_96_10	<i>AUX_ENDO_LAG_96_10</i>	AUX_ENDO_LAG_96_10
AUX_ENDO_LAG_27_11	<i>AUX_ENDO_LAG_27_11</i>	AUX_ENDO_LAG_27_11
AUX_ENDO_LAG_96_11	<i>AUX_ENDO_LAG_96_11</i>	AUX_ENDO_LAG_96_11
AUX_ENDO_LAG_27_12	<i>AUX_ENDO_LAG_27_12</i>	AUX_ENDO_LAG_27_12
AUX_ENDO_LAG_96_12	<i>AUX_ENDO_LAG_96_12</i>	AUX_ENDO_LAG_96_12
AUX_ENDO_LAG_27_13	<i>AUX_ENDO_LAG_27_13</i>	AUX_ENDO_LAG_27_13
AUX_ENDO_LAG_96_13	<i>AUX_ENDO_LAG_96_13</i>	AUX_ENDO_LAG_96_13
AUX_ENDO_LAG_27_14	<i>AUX_ENDO_LAG_27_14</i>	AUX_ENDO_LAG_27_14
AUX_ENDO_LAG_96_14	<i>AUX_ENDO_LAG_96_14</i>	AUX_ENDO_LAG_96_14
AUX_ENDO_LAG_27_15	<i>AUX_ENDO_LAG_27_15</i>	AUX_ENDO_LAG_27_15
AUX_ENDO_LAG_96_15	<i>AUX_ENDO_LAG_96_15</i>	AUX_ENDO_LAG_96_15
AUX_ENDO_LAG_27_16	<i>AUX_ENDO_LAG_27_16</i>	AUX_ENDO_LAG_27_16
AUX_ENDO_LAG_96_16	<i>AUX_ENDO_LAG_96_16</i>	AUX_ENDO_LAG_96_16
AUX_ENDO_LAG_27_17	<i>AUX_ENDO_LAG_27_17</i>	AUX_ENDO_LAG_27_17
AUX_ENDO_LAG_96_17	<i>AUX_ENDO_LAG_96_17</i>	AUX_ENDO_LAG_96_17
AUX_ENDO_LAG_27_18	<i>AUX_ENDO_LAG_27_18</i>	AUX_ENDO_LAG_27_18
AUX_ENDO_LAG_96_18	<i>AUX_ENDO_LAG_96_18</i>	AUX_ENDO_LAG_96_18
AUX_ENDO_LAG_27_19	<i>AUX_ENDO_LAG_27_19</i>	AUX_ENDO_LAG_27_19
AUX_ENDO_LAG_96_19	<i>AUX_ENDO_LAG_96_19</i>	AUX_ENDO_LAG_96_19

Table 1 – Continued

AUX_ENDO_LAG_27_20	AUX_ENDO_LAG_96_20
AUX_ENDO_LAG_27_21	AUX_ENDO_LAG_96_21
AUX_ENDO_LAG_27_22	AUX_ENDO_LAG_96_22
AUX_ENDO_LAG_27_23	AUX_ENDO_LAG_96_23
AUX_ENDO_LAG_27_24	AUX_ENDO_LAG_96_24
AUX_ENDO_LAG_27_25	AUX_ENDO_LAG_96_25
AUX_ENDO_LAG_27_26	AUX_ENDO_LAG_96_26
AUX_ENDO_LAG_27_27	AUX_ENDO_LAG_96_27
AUX_ENDO_LAG_27_28	AUX_ENDO_LAG_96_28
AUX_ENDO_LAG_27_29	AUX_ENDO_LAG_96_29
AUX_ENDO_LAG_27_30	AUX_ENDO_LAG_96_30
AUX_ENDO_LAG_27_31	AUX_ENDO_LAG_96_31
AUX_ENDO_LAG_27_32	AUX_ENDO_LAG_96_32
AUX_ENDO_LAG_27_33	AUX_ENDO_LAG_96_33
AUX_ENDO_LAG_27_34	AUX_ENDO_LAG_96_34
AUX_ENDO_LAG_27_35	AUX_ENDO_LAG_96_35
AUX_ENDO_LAG_27_36	AUX_ENDO_LAG_96_36
AUX_ENDO_LAG_27_37	AUX_ENDO_LAG_96_37
AUX_ENDO_LAG_27_38	AUX_ENDO_LAG_96_38
AUX_ENDO_LAG_135_1	AUX_ENDO_LAG_135_2
AUX_ENDO_LAG_135_2	AUX_ENDO_LAG_135_3
AUX_ENDO_LAG_135_3	AUX_ENDO_LAG_135_4
AUX_ENDO_LAG_135_4	AUX_ENDO_LAG_135_5
AUX_ENDO_LAG_135_5	AUX_ENDO_LAG_135_6
AUX_ENDO_LAG_135_6	AUX_ENDO_LAG_135_7

Table 1 – Continued

[illegible]

Table 1 – Continued

Variable	\LaTeX	Description
AUX_EXO_LAG_140_14	$AUX_EXO_LAG_{140.14}$	AUX_EXO_LAG_140.14
AUX_EXO_LAG_140_15	$AUX_EXO_LAG_{140.15}$	AUX_EXO_LAG_140.15
AUX_EXO_LAG_140_16	$AUX_EXO_LAG_{140.16}$	AUX_EXO_LAG_140.16
AUX_EXO_LAG_140_17	$AUX_EXO_LAG_{140.17}$	AUX_EXO_LAG_140.17
AUX_EXO_LAG_140_18	$AUX_EXO_LAG_{140.18}$	AUX_EXO_LAG_140.18
AUX_EXO_LAG_140_19	$AUX_EXO_LAG_{140.19}$	AUX_EXO_LAG_140.19
AUX_EXO_LAG_140_20	$AUX_EXO_LAG_{140.20}$	AUX_EXO_LAG_140.20
AUX_EXO_LAG_140_21	$AUX_EXO_LAG_{140.21}$	AUX_EXO_LAG_140.21
AUX_EXO_LAG_140_22	$AUX_EXO_LAG_{140.22}$	AUX_EXO_LAG_140.22
AUX_EXO_LAG_140_23	$AUX_EXO_LAG_{140.23}$	AUX_EXO_LAG_140.23
AUX_EXO_LAG_140_24	$AUX_EXO_LAG_{140.24}$	AUX_EXO_LAG_140.24
AUX_EXO_LAG_140_25	$AUX_EXO_LAG_{140.25}$	AUX_EXO_LAG_140.25
AUX_EXO_LAG_140_26	$AUX_EXO_LAG_{140.26}$	AUX_EXO_LAG_140.26
AUX_EXO_LAG_140_27	$AUX_EXO_LAG_{140.27}$	AUX_EXO_LAG_140.27
AUX_EXO_LAG_140_28	$AUX_EXO_LAG_{140.28}$	AUX_EXO_LAG_140.28
AUX_EXO_LAG_140_29	$AUX_EXO_LAG_{140.29}$	AUX_EXO_LAG_140.29
AUX_EXO_LAG_140_30	$AUX_EXO_LAG_{140.30}$	AUX_EXO_LAG_140.30
AUX_EXO_LAG_140_31	$AUX_EXO_LAG_{140.31}$	AUX_EXO_LAG_140.31
AUX_EXO_LAG_140_32	$AUX_EXO_LAG_{140.32}$	AUX_EXO_LAG_140.32
AUX_EXO_LAG_140_33	$AUX_EXO_LAG_{140.33}$	AUX_EXO_LAG_140.33
AUX_EXO_LAG_140_34	$AUX_EXO_LAG_{140.34}$	AUX_EXO_LAG_140.34
AUX_EXO_LAG_140_35	$AUX_EXO_LAG_{140.35}$	AUX_EXO_LAG_140.35
AUX_EXO_LAG_140_36	$AUX_EXO_LAG_{140.36}$	AUX_EXO_LAG_140.36
AUX_EXO_LAG_140_37	$AUX_EXO_LAG_{140.37}$	AUX_EXO_LAG_140.37
AUX_EXO_LAG_140_38	$AUX_EXO_LAG_{140.38}$	AUX_EXO_LAG_140.38

Table 2: Exogenous

Variable	\LaTeX	Description
delall	$delall$	delall

Table 3: Parameters

Variable	\LaTeX	Description
Init_gdpratio	\mathfrak{R}	steady state GDP ratio Home GDP / Foreign GDP
R_SS	$R_S S$	steady state of real interest rate
ZETAYSS	$ZETAYSS$	steady state of young / worker
ZETARSS	$ZETARSS$	steady state of retiree / worker
SHINNOVW	$SHINNOVW$	share of innovation workers
YINNOVSH	κ	scale parameter to match new young innovators

Table 3 – Continued

Variable	\LaTeX	Description
ETAR	η^r	replacement ratio
DELTAHE	δ_{HE}	share of health expenditure to GDP per capita
NP	n_p	average working years
FERTSS	$FERTSS$	steady state of fertility
RHOYW	ρ^{yw}	importance of young innovators in aggregate new ideas
LAMY	y^w	rate of no longer active in innovation sector
PSISS	$PSISS$	steady state of operation cost
GSS	GSS	steady state of growth rate
PERS	$PERS$	PERS
RATIODEL	$\epsilon^{\delta'}$	elasticity of delta prime to capital utilization
OMEGAR	ω^w	rate of staying workers
RHOU	ρ_U	preference parameter
BBETA	β	subjective discount factor
ALPHA	α	fixed capital share of added value
GAMMAI	γ_I	intermediate good share
VARNU	ϑ	markup of intermediate firms
BMEGA	$BMEGA$	scale parameter of operation cost
CHI	χ	scale parameter in innovation process
RHO	ρ	R&D elasticity of new technology creation in equilibrium
PHI	ϕ	survival rate of new ideas or prototypes
ELASMU	ϵ_μ	elasticity of markup of input firms to number of input firms
ELASLAM	ϵ_λ	elasticity of λ
DELPRIMESS	$DELPRIMESS$	steady state of δ^{prime}
DELSS	$DELSS$	steady state of δ
MUSS	$MUSS$	steady state of μ
LAMSS	$LAMSS$	steady state of λ
USS	USS	steady state of capital utilization
VARPISS	$VARPISS$	steady state of ϖ
ZASS	$ZASS$	steady state of z_a
KSS	KSS	steady state of k
NSS	NSS	steady state of \hat{g}_n
GAMMASS	$GAMMASS$	steady state of γ
RHOE	ρ_E	obsolescence of labor skills
CHIE	χ_E	scale parameter in average effective units process
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

Table 3 – Continued

	Variable	\LaTeX	Description
drs_12	<i>drs_12</i>		drs_12
drs_13	<i>drs_13</i>		drs_13
drs_14	<i>drs_14</i>		drs_14
drs_15	<i>drs_15</i>		drs_15
drs_16	<i>drs_16</i>		drs_16
drs_17	<i>drs_17</i>		drs_17
drs_18	<i>drs_18</i>		drs_18
drs_19	<i>drs_19</i>		drs_19
drs_20	<i>drs_20</i>		drs_20
drs_21	<i>drs_21</i>		drs_21
drs_22	<i>drs_22</i>		drs_22
drs_23	<i>drs_23</i>		drs_23
drs_24	<i>drs_24</i>		drs_24
drs_25	<i>drs_25</i>		drs_25
drs_26	<i>drs_26</i>		drs_26
drs_27	<i>drs_27</i>		drs_27
drs_28	<i>drs_28</i>		drs_28
drs_29	<i>drs_29</i>		drs_29
drs_30	<i>drs_30</i>		drs_30
drs_31	<i>drs_31</i>		drs_31
drs_32	<i>drs_32</i>		drs_32
drs_33	<i>drs_33</i>		drs_33
drs_34	<i>drs_34</i>		drs_34
drs_35	<i>drs_35</i>		drs_35
drs_36	<i>drs_36</i>		drs_36
drs_37	<i>drs_37</i>		drs_37
drs_38	<i>drs_38</i>		drs_38
drs_39	<i>drs_39</i>		drs_39
drs_40	<i>drs_40</i>		drs_40
dws_1	<i>dws_1</i>		dws_1
dws_2	<i>dws_2</i>		dws_2
dws_3	<i>dws_3</i>		dws_3
dws_4	<i>dws_4</i>		dws_4
dws_5	<i>dws_5</i>		dws_5
dws_6	<i>dws_6</i>		dws_6
dws_7	<i>dws_7</i>		dws_7
dws_8	<i>dws_8</i>		dws_8
dws_9	<i>dws_9</i>		dws_9
dws_10	<i>dws_10</i>		dws_10
dws_11	<i>dws_11</i>		dws_11
dws_12	<i>dws_12</i>		dws_12
dws_13	<i>dws_13</i>		dws_13
dws_14	<i>dws_14</i>		dws_14
dws_15	<i>dws_15</i>		dws_15
dws_16	<i>dws_16</i>		dws_16

Table 3 – Continued

	Variable	\LaTeX	Description
dws_17	<i>dws_17</i>		dws_17
dws_18	<i>dws_18</i>		dws_18
dws_19	<i>dws_19</i>		dws_19
dws_20	<i>dws_20</i>		dws_20
dws_21	<i>dws_21</i>		dws_21
dws_22	<i>dws_22</i>		dws_22
dws_23	<i>dws_23</i>		dws_23
dws_24	<i>dws_24</i>		dws_24
dws_25	<i>dws_25</i>		dws_25
dws_26	<i>dws_26</i>		dws_26
dws_27	<i>dws_27</i>		dws_27
dws_28	<i>dws_28</i>		dws_28
dws_29	<i>dws_29</i>		dws_29
dws_30	<i>dws_30</i>		dws_30
dws_31	<i>dws_31</i>		dws_31
dws_32	<i>dws_32</i>		dws_32
dws_33	<i>dws_33</i>		dws_33
dws_34	<i>dws_34</i>		dws_34
dws_35	<i>dws_35</i>		dws_35
dws_36	<i>dws_36</i>		dws_36
dws_37	<i>dws_37</i>		dws_37
dws_38	<i>dws_38</i>		dws_38
dws_39	<i>dws_39</i>		dws_39
dws_40	<i>dws_40</i>		dws_40
gn_1	<i>gn_1</i>		gn_1
gn_2	<i>gn_2</i>		gn_2
gn_3	<i>gn_3</i>		gn_3
gn_4	<i>gn_4</i>		gn_4
gn_5	<i>gn_5</i>		gn_5
gn_6	<i>gn_6</i>		gn_6
gn_7	<i>gn_7</i>		gn_7
gn_8	<i>gn_8</i>		gn_8
gn_9	<i>gn_9</i>		gn_9
gn_10	<i>gn_10</i>		gn_10
gn_11	<i>gn_11</i>		gn_11
gn_12	<i>gn_12</i>		gn_12
gn_13	<i>gn_13</i>		gn_13
gn_14	<i>gn_14</i>		gn_14
gn_15	<i>gn_15</i>		gn_15
gn_16	<i>gn_16</i>		gn_16
gn_17	<i>gn_17</i>		gn_17
gn_18	<i>gn_18</i>		gn_18
gn_19	<i>gn_19</i>		gn_19
gn_20	<i>gn_20</i>		gn_20
gn_21	<i>gn_21</i>		gn_21

Table 3 – Continued

Variable	\LaTeX	Description
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
gn_30	gn_{30}	gn_30
gn_31	gn_{31}	gn_31
gn_32	gn_{32}	gn_32
gn_33	gn_{33}	gn_33
gn_34	gn_{34}	gn_34
gn_35	gn_{35}	gn_35
gn_36	gn_{36}	gn_36
gn_37	gn_{37}	gn_37
gn_38	gn_{38}	gn_38
gn_39	gn_{39}	gn_39
gn_40	gn_{40}	gn_40
R_SS_star	R_{SS_star}	R_SS_star
ZETAYSS_star	$ZETAYSS^*$	steady state of young / worker
ZETARSS_star	$ZETARSS^*$	steady state of retiree / worker
SHINNOVW_star	$SHINNOVW^*$	share of innovation workers
YINNOVSH_star	κ^*	scale parameter to match new young innovators
ETAR_star	η^{r*}	replacement ratio
DELTAHE_star	δ_{HE}^*	share of health expenditure to GDP per capita
NP_star	n_p^*	average working years
FERTSS_star	$FERTSS^*$	steady state of fertility
RHOYW_star	ρ^{yw*}	importance of young innovators in aggregate new ideas
LAMY_star	$_{yw*}$	rate of no longer active in innovation sector
PSISS_star	$PSISS^*$	steady state of operation cost
GSS_star	GSS^*	steady state of growth rate
PERS_star	$PERS_star$	PERS_star
RATIODEL_star	$\epsilon^{\delta' *}$	elasticity of delta prime to capital utilization
OMEGAR_star	ω^{w*}	rate of staying workers
RHOU_star	ρ_U^*	preference parameter
BBETA_star	β^*	subjective discount factor
ALPHA_star	α^*	fixed capital share of added value
GAMMAI_star	γ_I^*	intermediate good share
VARNU_star	ϑ^*	markup of intermediate firms
BMEGA_star	$BMEGA^*$	scale parameter of operation cost
CHI_star	χ^*	scale parameter in innovation process
RHO_star	ρ^*	R&D elasticity of new technology creation in equilibrium
PHI_star	ϕ^*	survival rate of new ideas or prototypes
ELASMU_star	ϵ_μ^*	elasticity of markup of input firms to number of input firms

Table 3 – Continued

Variable	\LaTeX	Description
ELASLAM_star	ϵ_{λ}^*	elasticity of λ
DELPRIMESS_star	$DELPRIMESS^*$	steady state of δ^{prime}
DELSS_star	$DELSS^*$	steady state of δ
MUSS_star	$MUSS^*$	steady state of μ
LAMSS_star	$LAMSS^*$	steady state of λ
USS_star	USS^*	steady state of capital utilization
VARPISS_star	$VARPISS^*$	steady state of ϖ
ZASS_star	$ZASS^*$	steady state of z_a
KSS_star	KSS^*	steady state of k
NSS_star	NSS^*	steady state of $g^{\wedge}n$
GAMMASS_star	$GAMMASS^*$	steady state of γ
RHOE_star	ρ_E^*	obsolescence of labor skills
CHIE_star	χ_E^*	scale parameter in average effective units process
gn_1_star	gn_1_star	gn_1_star
gn_2_star	gn_2_star	gn_2_star
gn_3_star	gn_3_star	gn_3_star
gn_4_star	gn_4_star	gn_4_star
gn_5_star	gn_5_star	gn_5_star
gn_6_star	gn_6_star	gn_6_star
gn_7_star	gn_7_star	gn_7_star
gn_8_star	gn_8_star	gn_8_star
gn_9_star	gn_9_star	gn_9_star
gn_10_star	gn_10_star	gn_10_star
gn_11_star	gn_11_star	gn_11_star
gn_12_star	gn_12_star	gn_12_star
gn_13_star	gn_13_star	gn_13_star
gn_14_star	gn_14_star	gn_14_star
gn_15_star	gn_15_star	gn_15_star
gn_16_star	gn_16_star	gn_16_star
gn_17_star	gn_17_star	gn_17_star
gn_18_star	gn_18_star	gn_18_star
gn_19_star	gn_19_star	gn_19_star
gn_20_star	gn_20_star	gn_20_star
gn_21_star	gn_21_star	gn_21_star
gn_22_star	gn_22_star	gn_22_star
gn_23_star	gn_23_star	gn_23_star
gn_24_star	gn_24_star	gn_24_star
gn_25_star	gn_25_star	gn_25_star
gn_26_star	gn_26_star	gn_26_star
gn_27_star	gn_27_star	gn_27_star
gn_28_star	gn_28_star	gn_28_star
gn_29_star	gn_29_star	gn_29_star
gn_30_star	gn_30_star	gn_30_star
gn_31_star	gn_31_star	gn_31_star
gn_32_star	gn_32_star	gn_32_star

Table 3 – Continued

Variable	\LaTeX	Description
gn_33_star	<i>gn_33_star</i>	gn_33_star
gn_34_star	<i>gn_34_star</i>	gn_34_star
gn_35_star	<i>gn_35_star</i>	gn_35_star
gn_36_star	<i>gn_36_star</i>	gn_36_star
gn_37_star	<i>gn_37_star</i>	gn_37_star
gn_38_star	<i>gn_38_star</i>	gn_38_star
gn_39_star	<i>gn_39_star</i>	gn_39_star
gn_40_star	<i>gn_40_star</i>	gn_40_star
dws_1_star	<i>dws_1_star</i>	dws_1_star
dws_2_star	<i>dws_2_star</i>	dws_2_star
dws_3_star	<i>dws_3_star</i>	dws_3_star
dws_4_star	<i>dws_4_star</i>	dws_4_star
dws_5_star	<i>dws_5_star</i>	dws_5_star
dws_6_star	<i>dws_6_star</i>	dws_6_star
dws_7_star	<i>dws_7_star</i>	dws_7_star
dws_8_star	<i>dws_8_star</i>	dws_8_star
dws_9_star	<i>dws_9_star</i>	dws_9_star
dws_10_star	<i>dws_10_star</i>	dws_10_star
dws_11_star	<i>dws_11_star</i>	dws_11_star
dws_12_star	<i>dws_12_star</i>	dws_12_star
dws_13_star	<i>dws_13_star</i>	dws_13_star
dws_14_star	<i>dws_14_star</i>	dws_14_star
dws_15_star	<i>dws_15_star</i>	dws_15_star
dws_16_star	<i>dws_16_star</i>	dws_16_star
dws_17_star	<i>dws_17_star</i>	dws_17_star
dws_18_star	<i>dws_18_star</i>	dws_18_star
dws_19_star	<i>dws_19_star</i>	dws_19_star
dws_20_star	<i>dws_20_star</i>	dws_20_star
dws_21_star	<i>dws_21_star</i>	dws_21_star
dws_22_star	<i>dws_22_star</i>	dws_22_star
dws_23_star	<i>dws_23_star</i>	dws_23_star
dws_24_star	<i>dws_24_star</i>	dws_24_star
dws_25_star	<i>dws_25_star</i>	dws_25_star
dws_26_star	<i>dws_26_star</i>	dws_26_star
dws_27_star	<i>dws_27_star</i>	dws_27_star
dws_28_star	<i>dws_28_star</i>	dws_28_star
dws_29_star	<i>dws_29_star</i>	dws_29_star
dws_30_star	<i>dws_30_star</i>	dws_30_star
dws_31_star	<i>dws_31_star</i>	dws_31_star
dws_32_star	<i>dws_32_star</i>	dws_32_star
dws_33_star	<i>dws_33_star</i>	dws_33_star
dws_34_star	<i>dws_34_star</i>	dws_34_star
dws_35_star	<i>dws_35_star</i>	dws_35_star
dws_36_star	<i>dws_36_star</i>	dws_36_star
dws_37_star	<i>dws_37_star</i>	dws_37_star

Table 3 – Continued

	Variable	LaTeX	Description
dws_38_star	<i>dws_38_star</i>		dws_38_star
dws_39_star	<i>dws_39_star</i>		dws_39_star
dws_40_star	<i>dws_40_star</i>		dws_40_star
drs_1_star	<i>drs_1_star</i>		drs_1_star
drs_2_star	<i>drs_2_star</i>		drs_2_star
drs_3_star	<i>drs_3_star</i>		drs_3_star
drs_4_star	<i>drs_4_star</i>		drs_4_star
drs_5_star	<i>drs_5_star</i>		drs_5_star
drs_6_star	<i>drs_6_star</i>		drs_6_star
drs_7_star	<i>drs_7_star</i>		drs_7_star
drs_8_star	<i>drs_8_star</i>		drs_8_star
drs_9_star	<i>drs_9_star</i>		drs_9_star
drs_10_star	<i>drs_10_star</i>		drs_10_star
drs_11_star	<i>drs_11_star</i>		drs_11_star
drs_12_star	<i>drs_12_star</i>		drs_12_star
drs_13_star	<i>drs_13_star</i>		drs_13_star
drs_14_star	<i>drs_14_star</i>		drs_14_star
drs_15_star	<i>drs_15_star</i>		drs_15_star
drs_16_star	<i>drs_16_star</i>		drs_16_star
drs_17_star	<i>drs_17_star</i>		drs_17_star
drs_18_star	<i>drs_18_star</i>		drs_18_star
drs_19_star	<i>drs_19_star</i>		drs_19_star
drs_20_star	<i>drs_20_star</i>		drs_20_star
drs_21_star	<i>drs_21_star</i>		drs_21_star
drs_22_star	<i>drs_22_star</i>		drs_22_star
drs_23_star	<i>drs_23_star</i>		drs_23_star
drs_24_star	<i>drs_24_star</i>		drs_24_star
drs_25_star	<i>drs_25_star</i>		drs_25_star
drs_26_star	<i>drs_26_star</i>		drs_26_star
drs_27_star	<i>drs_27_star</i>		drs_27_star
drs_28_star	<i>drs_28_star</i>		drs_28_star
drs_29_star	<i>drs_29_star</i>		drs_29_star
drs_30_star	<i>drs_30_star</i>		drs_30_star
drs_31_star	<i>drs_31_star</i>		drs_31_star
drs_32_star	<i>drs_32_star</i>		drs_32_star
drs_33_star	<i>drs_33_star</i>		drs_33_star
drs_34_star	<i>drs_34_star</i>		drs_34_star
drs_35_star	<i>drs_35_star</i>		drs_35_star
drs_36_star	<i>drs_36_star</i>		drs_36_star
drs_37_star	<i>drs_37_star</i>		drs_37_star
drs_38_star	<i>drs_38_star</i>		drs_38_star
drs_39_star	<i>drs_39_star</i>		drs_39_star
drs_40_star	<i>drs_40_star</i>		drs_40_star

Table 4: Parameter Values

Parameter	Value	Description
\mathfrak{K}	0.500	steady state GDP ratio Home GDP / Foreign GDP
R_{SS}	1.234	steady state of real interest rate
$ZETAYSS$	0.700	steady state of young / worker
$ZETARSS$	0.227	steady state of retiree / worker
$SHINNOVW$	0.010	share of innovation workers
κ	0.035	scale parameter to match new young innovators
η^r	0.400	replacement ratio
δ_{HE}	0.100	share of health expenditure to GDP per capita
n_p	25.000	average working years
$FERTSS$	0.060	steady state of fertility
ρ^{yw}	0.457	importance of young innovators in aggregate new ideas
yw	0.048	rate of no longer active in innovation sector
$PSISS$	0.604	steady state of operation cost
GSS	1.058	steady state of growth rate
$PERS$	0.900	PERS
$\epsilon^{\delta'}$	0.333	elasticity of delta prime to capital utilization
ω^w	0.975	rate of staying workers
ρ_U	-3.000	preference parameter
β	0.960	subjective discount factor
α	0.333	fixed capital share of added value
γ_I	0.500	intermediate good share
ϑ	1.667	markup of intermediate firms
$BMEGA$	0.151	scale parameter of operation cost
χ	48.619	scale parameter in innovation process
ρ	0.900	R&D elasticity of new technology creation in equilibrium
ϕ	0.850	survival rate of new ideas or prototypes
ϵ_μ	-1.000	elasticity of markup of input firms to number of input firms
ϵ_λ	0.741	elasticity of λ
$DELPRIMESS$	0.393	steady state of δ^{prime}
$DELSS$	0.080	steady state of δ
$MUSS$	1.100	steady state of μ
$LAMSS$	0.100	steady state of λ
USS	0.800	steady state of capital utilization
$VARPISS$	0.096	steady state of ϖ
$ZASS$	3.260	steady state of z_a
KSS	0.510	steady state of k
NSS	1.010	steady state of \hat{g}_n
$GAMMASS$	0.900	steady state of γ
ρ_E	0.900	obsolescence of labor skills
χ_E	1652.776	scale parameter in average effective units process
drs_1	0.011	drs_1
drs_2	0.011	drs_2
drs_3	0.012	drs_3

Table 4 – Continued

	Parameter	Value	Description
	<i>drs_4</i>	0.013	drs_4
	<i>drs_5</i>	0.012	drs_5
	<i>drs_6</i>	0.013	drs_6
	<i>drs_7</i>	0.013	drs_7
	<i>drs_8</i>	0.012	drs_8
	<i>drs_9</i>	0.013	drs_9
	<i>drs_10</i>	0.011	drs_10
	<i>drs_11</i>	0.012	drs_11
	<i>drs_12</i>	0.011	drs_12
	<i>drs_13</i>	0.012	drs_13
	<i>drs_14</i>	0.012	drs_14
	<i>drs_15</i>	0.014	drs_15
	<i>drs_16</i>	0.015	drs_16
	<i>drs_17</i>	0.015	drs_17
	<i>drs_18</i>	0.014	drs_18
	<i>drs_19</i>	0.015	drs_19
	<i>drs_20</i>	0.015	drs_20
	<i>drs_21</i>	0.014	drs_21
	<i>drs_22</i>	0.014	drs_22
	<i>drs_23</i>	0.011	drs_23
	<i>drs_24</i>	0.012	drs_24
	<i>drs_25</i>	0.010	drs_25
	<i>drs_26</i>	0.013	drs_26
	<i>drs_27</i>	0.012	drs_27
	<i>drs_28</i>	0.012	drs_28
	<i>drs_29</i>	0.011	drs_29
	<i>drs_30</i>	0.011	drs_30
	<i>drs_31</i>	0.008	drs_31
	<i>drs_32</i>	0.009	drs_32
	<i>drs_33</i>	0.008	drs_33
	<i>drs_34</i>	0.007	drs_34
	<i>drs_35</i>	0.007	drs_35
	<i>drs_36</i>	0.006	drs_36
	<i>drs_37</i>	0.006	drs_37
	<i>drs_38</i>	0.007	drs_38
	<i>drs_39</i>	0.007	drs_39
	<i>drs_40</i>	0.007	drs_40
	<i>dws_1</i>	-0.003	dws_1
	<i>dws_2</i>	-0.002	dws_2
	<i>dws_3</i>	-0.004	dws_3
	<i>dws_4</i>	-0.005	dws_4
	<i>dws_5</i>	-0.005	dws_5
	<i>dws_6</i>	-0.007	dws_6
	<i>dws_7</i>	-0.009	dws_7

Table 4 – Continued

	Parameter	Value	Description
	<i>dws_8</i>	-0.006	dws_8
	<i>dws_9</i>	-0.007	dws_9
	<i>dws_10</i>	-0.005	dws_10
	<i>dws_11</i>	-0.006	dws_11
	<i>dws_12</i>	-0.006	dws_12
	<i>dws_13</i>	-0.006	dws_13
	<i>dws_14</i>	-0.006	dws_14
	<i>dws_15</i>	-0.008	dws_15
	<i>dws_16</i>	-0.007	dws_16
	<i>dws_17</i>	-0.008	dws_17
	<i>dws_18</i>	-0.008	dws_18
	<i>dws_19</i>	-0.008	dws_19
	<i>dws_20</i>	-0.008	dws_20
	<i>dws_21</i>	-0.007	dws_21
	<i>dws_22</i>	-0.007	dws_22
	<i>dws_23</i>	-0.007	dws_23
	<i>dws_24</i>	-0.007	dws_24
	<i>dws_25</i>	-0.007	dws_25
	<i>dws_26</i>	-0.009	dws_26
	<i>dws_27</i>	-0.008	dws_27
	<i>dws_28</i>	-0.008	dws_28
	<i>dws_29</i>	-0.006	dws_29
	<i>dws_30</i>	-0.005	dws_30
	<i>dws_31</i>	-0.003	dws_31
	<i>dws_32</i>	-0.003	dws_32
	<i>dws_33</i>	-0.002	dws_33
	<i>dws_34</i>	-0.001	dws_34
	<i>dws_35</i>	-0.002	dws_35
	<i>dws_36</i>	-0.002	dws_36
	<i>dws_37</i>	-0.002	dws_37
	<i>dws_38</i>	-0.003	dws_38
	<i>dws_39</i>	-0.004	dws_39
	<i>dws_40</i>	-0.004	dws_40
	<i>gn_1</i>	1.008	gn_1
	<i>gn_2</i>	1.005	gn_2
	<i>gn_3</i>	1.004	gn_3
	<i>gn_4</i>	1.005	gn_4
	<i>gn_5</i>	1.005	gn_5
	<i>gn_6</i>	1.006	gn_6
	<i>gn_7</i>	1.006	gn_7
	<i>gn_8</i>	1.006	gn_8
	<i>gn_9</i>	1.006	gn_9
	<i>gn_10</i>	1.006	gn_10
	<i>gn_11</i>	1.006	gn_11

Table 4 – Continued

	Parameter	Value	Description
	<i>gn_12</i>	1.005	gn_12
	<i>gn_13</i>	1.005	gn_13
	<i>gn_14</i>	1.005	gn_14
	<i>gn_15</i>	1.005	gn_15
	<i>gn_16</i>	1.005	gn_16
	<i>gn_17</i>	1.005	gn_17
	<i>gn_18</i>	1.004	gn_18
	<i>gn_19</i>	1.004	gn_19
	<i>gn_20</i>	1.003	gn_20
	<i>gn_21</i>	1.003	gn_21
	<i>gn_22</i>	1.003	gn_22
	<i>gn_23</i>	1.002	gn_23
	<i>gn_24</i>	1.002	gn_24
	<i>gn_25</i>	1.001	gn_25
	<i>gn_26</i>	1.001	gn_26
	<i>gn_27</i>	1.001	gn_27
	<i>gn_28</i>	1.000	gn_28
	<i>gn_29</i>	1.000	gn_29
	<i>gn_30</i>	0.999	gn_30
	<i>gn_31</i>	0.999	gn_31
	<i>gn_32</i>	0.998	gn_32
	<i>gn_33</i>	0.997	gn_33
	<i>gn_34</i>	0.997	gn_34
	<i>gn_35</i>	0.996	gn_35
	<i>gn_36</i>	0.996	gn_36
	<i>gn_37</i>	0.996	gn_37
	<i>gn_38</i>	0.995	gn_38
	<i>gn_39</i>	0.995	gn_39
	<i>gn_40</i>	0.995	gn_40
	<i>R_SS_star</i>	1.185	R_SS_star
	<i>ZETAYSS*</i>	0.700	steady state of young / worker
	<i>ZETARSS*</i>	0.227	steady state of retiree / worker
	<i>SHINNOVW*</i>	0.010	share of innovation workers
	κ^*	0.059	scale parameter to match new young innovators
	η^{r*}	0.400	replacement ratio
	δ_{HE}^*	0.100	share of health expenditure to GDP per capita
	n_p^*	25.000	average working years
	<i>FERTSS*</i>	0.060	steady state of fertility
	ρ^{yw*}	0.511	importance of young innovators in aggregate new ideas
	yw^*	0.048	rate of no longer active in innovation sector
	<i>PSISS*</i>	0.669	steady state of operation cost
	<i>GSS*</i>	1.046	steady state of growth rate
	<i>PERS_star</i>	0.900	PERS_star
	$\epsilon^{\delta' *}$	0.333	elasticity of delta prime to capital utilization

Table 4 – Continued

Parameter	Value	Description
ω^{w*}	0.975	rate of staying workers
ρ_U^*	-3.000	preference parameter
β^*	0.960	subjective discount factor
α^*	0.333	fixed capital share of added value
γ_I^*	0.500	intermediate good share
ϑ^*	1.667	markup of intermediate firms
$BMEGA^*$	0.136	scale parameter of operation cost
χ^*	50.096	scale parameter in innovation process
ρ^*	0.900	R&D elasticity of new technology creation in equilibrium
ϕ^*	0.850	survival rate of new ideas or prototypes
ϵ_μ^*	-1.000	elasticity of markup of input firms to number of input firms
ϵ_λ^*	0.785	elasticity of λ
$DELPRIMESS^*$	0.331	steady state of δ^{prime}
$DELSS^*$	0.080	steady state of δ
$MUSS^*$	1.100	steady state of μ
$LAMSS^*$	0.100	steady state of λ
USS^*	0.800	steady state of capital utilization
$VARPISS^*$	0.113	steady state of ϖ
$ZASS^*$	3.126	steady state of z_a
KSS^*	0.598	steady state of k
NSS^*	1.010	steady state of \hat{g}_n
$GAMMASS^*$	0.900	steady state of γ
ρ_E^*	0.900	obsolescence of labor skills
χ_E^*	1689.513	scale parameter in average effective units process
gn_1_star	1.010	gn_1_star
gn_2_star	1.010	gn_2_star
gn_3_star	1.010	gn_3_star
gn_4_star	1.010	gn_4_star
gn_5_star	1.010	gn_5_star
gn_6_star	1.009	gn_6_star
gn_7_star	1.009	gn_7_star
gn_8_star	1.009	gn_8_star
gn_9_star	1.009	gn_9_star
gn_10_star	1.009	gn_10_star
gn_11_star	1.009	gn_11_star
gn_12_star	1.009	gn_12_star
gn_13_star	1.009	gn_13_star
gn_14_star	1.009	gn_14_star
gn_15_star	1.009	gn_15_star
gn_16_star	1.009	gn_16_star
gn_17_star	1.009	gn_17_star
gn_18_star	1.009	gn_18_star
gn_19_star	1.008	gn_19_star
gn_20_star	1.008	gn_20_star

Table 4 – Continued

	Parameter	Value	Description
<i>gn_21_star</i>		1.008	<i>gn_21_star</i>
<i>gn_22_star</i>		1.008	<i>gn_22_star</i>
<i>gn_23_star</i>		1.008	<i>gn_23_star</i>
<i>gn_24_star</i>		1.008	<i>gn_24_star</i>
<i>gn_25_star</i>		1.008	<i>gn_25_star</i>
<i>gn_26_star</i>		1.007	<i>gn_26_star</i>
<i>gn_27_star</i>		1.007	<i>gn_27_star</i>
<i>gn_28_star</i>		1.007	<i>gn_28_star</i>
<i>gn_29_star</i>		1.007	<i>gn_29_star</i>
<i>gn_30_star</i>		1.007	<i>gn_30_star</i>
<i>gn_31_star</i>		1.007	<i>gn_31_star</i>
<i>gn_32_star</i>		1.007	<i>gn_32_star</i>
<i>gn_33_star</i>		1.007	<i>gn_33_star</i>
<i>gn_34_star</i>		1.007	<i>gn_34_star</i>
<i>gn_35_star</i>		1.007	<i>gn_35_star</i>
<i>gn_36_star</i>		1.007	<i>gn_36_star</i>
<i>gn_37_star</i>		1.007	<i>gn_37_star</i>
<i>gn_38_star</i>		1.007	<i>gn_38_star</i>
<i>gn_39_star</i>		1.007	<i>gn_39_star</i>
<i>gn_40_star</i>		1.007	<i>gn_40_star</i>
<i>dws_1_star</i>		-0.002	<i>dws_1_star</i>
<i>dws_2_star</i>		-0.003	<i>dws_2_star</i>
<i>dws_3_star</i>		-0.003	<i>dws_3_star</i>
<i>dws_4_star</i>		-0.002	<i>dws_4_star</i>
<i>dws_5_star</i>		-0.002	<i>dws_5_star</i>
<i>dws_6_star</i>		-0.001	<i>dws_6_star</i>
<i>dws_7_star</i>		-0.001	<i>dws_7_star</i>
<i>dws_8_star</i>		-0.001	<i>dws_8_star</i>
<i>dws_9_star</i>		-0.001	<i>dws_9_star</i>
<i>dws_10_star</i>		-0.001	<i>dws_10_star</i>
<i>dws_11_star</i>		-0.001	<i>dws_11_star</i>
<i>dws_12_star</i>		-0.001	<i>dws_12_star</i>
<i>dws_13_star</i>		-0.001	<i>dws_13_star</i>
<i>dws_14_star</i>		-0.001	<i>dws_14_star</i>
<i>dws_15_star</i>		-0.001	<i>dws_15_star</i>
<i>dws_16_star</i>		-0.001	<i>dws_16_star</i>
<i>dws_17_star</i>		-0.001	<i>dws_17_star</i>
<i>dws_18_star</i>		-0.001	<i>dws_18_star</i>
<i>dws_19_star</i>		-0.000	<i>dws_19_star</i>
<i>dws_20_star</i>		-0.000	<i>dws_20_star</i>
<i>dws_21_star</i>		-0.000	<i>dws_21_star</i>
<i>dws_22_star</i>		-0.000	<i>dws_22_star</i>
<i>dws_23_star</i>		-0.000	<i>dws_23_star</i>
<i>dws_24_star</i>		-0.001	<i>dws_24_star</i>

Table 4 – Continued

	Parameter	Value	Description
<i>dws_25_star</i>		-0.001	dws_25_star
<i>dws_26_star</i>		-0.001	dws_26_star
<i>dws_27_star</i>		-0.001	dws_27_star
<i>dws_28_star</i>		-0.001	dws_28_star
<i>dws_29_star</i>		-0.001	dws_29_star
<i>dws_30_star</i>		-0.001	dws_30_star
<i>dws_31_star</i>		-0.001	dws_31_star
<i>dws_32_star</i>		-0.001	dws_32_star
<i>dws_33_star</i>		-0.001	dws_33_star
<i>dws_34_star</i>		-0.001	dws_34_star
<i>dws_35_star</i>		-0.001	dws_35_star
<i>dws_36_star</i>		-0.001	dws_36_star
<i>dws_37_star</i>		-0.001	dws_37_star
<i>dws_38_star</i>		-0.001	dws_38_star
<i>dws_39_star</i>		-0.001	dws_39_star
<i>dws_40_star</i>		-0.001	dws_40_star
<i>drs_1_star</i>		0.005	drs_1_star
<i>drs_2_star</i>		0.005	drs_2_star
<i>drs_3_star</i>		0.004	drs_3_star
<i>drs_4_star</i>		0.004	drs_4_star
<i>drs_5_star</i>		0.003	drs_5_star
<i>drs_6_star</i>		0.003	drs_6_star
<i>drs_7_star</i>		0.003	drs_7_star
<i>drs_8_star</i>		0.002	drs_8_star
<i>drs_9_star</i>		0.002	drs_9_star
<i>drs_10_star</i>		0.002	drs_10_star
<i>drs_11_star</i>		0.002	drs_11_star
<i>drs_12_star</i>		0.002	drs_12_star
<i>drs_13_star</i>		0.001	drs_13_star
<i>drs_14_star</i>		0.001	drs_14_star
<i>drs_15_star</i>		0.001	drs_15_star
<i>drs_16_star</i>		0.001	drs_16_star
<i>drs_17_star</i>		0.001	drs_17_star
<i>drs_18_star</i>		0.001	drs_18_star
<i>drs_19_star</i>		0.001	drs_19_star
<i>drs_20_star</i>		0.001	drs_20_star
<i>drs_21_star</i>		0.001	drs_21_star
<i>drs_22_star</i>		0.001	drs_22_star
<i>drs_23_star</i>		0.001	drs_23_star
<i>drs_24_star</i>		0.001	drs_24_star
<i>drs_25_star</i>		0.001	drs_25_star
<i>drs_26_star</i>		0.001	drs_26_star
<i>drs_27_star</i>		0.001	drs_27_star
<i>drs_28_star</i>		0.001	drs_28_star

Table 4 – Continued

	Parameter	Value	Description
	<i>drs_29_star</i>	0.002	drs_29_star
	<i>drs_30_star</i>	0.002	drs_30_star
	<i>drs_31_star</i>	0.002	drs_31_star
	<i>drs_32_star</i>	0.002	drs_32_star
	<i>drs_33_star</i>	0.002	drs_33_star
	<i>drs_34_star</i>	0.002	drs_34_star
	<i>drs_35_star</i>	0.002	drs_35_star
	<i>drs_36_star</i>	0.002	drs_36_star
	<i>drs_37_star</i>	0.002	drs_37_star
	<i>drs_38_star</i>	0.002	drs_38_star
	<i>drs_39_star</i>	0.001	drs_39_star
	<i>drs_40_star</i>	0.001	drs_40_star

$$h^w_t = w_t + \frac{\omega^w}{r_t \mathfrak{Z}_t} \frac{g_{t+1}}{g^w_t} h^w_{t+1} \quad (1)$$

$$\tilde{T}^w_t = \tilde{\tau}_t + \frac{\omega^w}{r_t \mathfrak{Z}_t} \frac{g_{t+1}}{g^w_t} \tilde{T}^w_{t+1} \quad (2)$$

$$\tilde{D}^r_t = \tilde{d}^r_t + \frac{g_{t+1} \tilde{D}^r_{t+1} \gamma_t \zeta^r_{t-1}}{g^w_t r_t \zeta^r_t} \quad (3)$$

$$ay_t = \frac{1}{n_p} w_{t-1} (1 - \omega^w) + \frac{\left(1 - \frac{1}{n_p}\right) ay_{t-1} AUX_ENDO_LAG_26_1_{t-1}}{g_t} \quad (4)$$

$$tpe_t = ay_t \eta^r + \gamma_{t-1} \frac{g^\xi_{t-1}}{g_t} tpe_{t-1} \quad (5)$$

$$Pe_t = tpe_t + \frac{\zeta^r_{t-1} g_{t+1} \gamma_t Pe_{t+1}}{g^w_t r_t \zeta^r_t} \quad (6)$$

$$\tilde{D}^w_t = \tilde{d}^w_t + \frac{\omega^w}{r_t \mathfrak{Z}_t} \frac{g_{t+1}}{g^w_t} \tilde{D}^w_{t+1} + \frac{(1 - \omega^w) \epsilon^{\frac{\rho_U - 1}{\rho_U}}_{t+1}}{r_t \mathfrak{Z}_t} \frac{g_{t+1}}{g^w_t \zeta^r_t} \left(\tilde{D}^r_{t+1} + Pe_{t+1} \right) \quad (7)$$

$$c^w_t = \varsigma_t \left(\tilde{D}^w_t + h^w_t + \frac{r_{t-1} f a^w_{t-1}}{g_t} - \tilde{T}^w_t \right) \quad (8)$$

$$c^r_t = \varsigma_t \epsilon_t \left(Pe_t + \tilde{D}^r_t + \frac{r_{t-1} f a^r_{t-1}}{g_t} \right) \quad (9)$$

$$1 - \varsigma_t \epsilon_t = \frac{\gamma_t (r_t \beta)^{\frac{1}{1 - \rho_U}}}{r_t} \frac{\varsigma_t \epsilon_t}{\epsilon_{t+1} \varsigma_{t+1}} \quad (10)$$

$$1 - \varsigma_t = \frac{(\mathfrak{Z}_t r_t \beta)^{\frac{1}{1 - \rho_U}}}{r_t \mathfrak{Z}_t} \frac{\varsigma_t}{\varsigma_{t+1}} \quad (11)$$

$$\mathfrak{Z}_t = \omega^w + (1 - \omega^w) \epsilon^{\frac{\rho_U - 1}{\rho_U}}_{t+1} \quad (12)$$

$$he_t = \delta_{HE} \frac{\zeta^r_{t-1}}{1 + \zeta^r_{t-1} + \zeta^y_{t-1}} \quad (13)$$

$$\tilde{\tau}^A_t = tpe_t + he_t \quad (14)$$

$$\tilde{\tau}_t^E = w_t i^y_t \quad (15)$$

$$\tilde{\tau}_t = \tilde{\tau}_t^A + \tilde{\tau}_t^E \quad (16)$$

$$g^w_t = \omega^w + \zeta^y_{t-1} (1 - \omega^y_t) \quad (17)$$

$$n_t = g^w_t \frac{\zeta^y_t}{\zeta^y_{t-1}} \quad (18)$$

$$g^w_t \zeta^r_t = 1 - \omega^w + \gamma_t \zeta^r_{t-1} \quad (19)$$

$$g^n_t = (g^w_t \zeta^r_t + g^w_t + \zeta^y_{t-1} n_t) (1 + \zeta^r_{t-1} + \zeta^y_{t-1})^{(-1)} \quad (20)$$

$$g^\xi_t = \frac{\omega^w + \zeta^y_{t-1} (1 - \omega^y_t) (\rho_E + \frac{\chi_E}{2} i^{y2}_t)}{g^w_t} \quad (21)$$

$$\varsigma_t^{\frac{(-1)}{\rho_U}} = \frac{g_{t+1} i^y_t \chi_E \zeta^y_{t-1} (1 - \omega^y_t) \beta \varsigma_{t+1}^{\frac{\rho_U}{2}} w_{t+1}}{w_t g^w_t} \quad (22)$$

$$fert_t = n_t - \omega^y_t \quad (23)$$

$$(1 - \alpha) (1 - \gamma_I) = w_t \mu_t \quad (24)$$

$$\alpha (1 - \gamma_I) = \mu_t (r^k_t + \delta_t) \frac{k_{t-1}}{g_t} \quad (25)$$

$$\alpha (1 - \gamma_I) = \frac{k_{t-1}}{g_t} \mu_t \delta'_t u_t \quad (26)$$

$$g_t = \frac{\mu_t}{\mu_{t-1}} g^M_t g^{A^{1-\vartheta}}_{t-1} \quad (27)$$

$$g_t = g^{M\gamma_I}_t (g^\xi_{t-1} g^w_{t-1})^{(1-\alpha)(1-\gamma_I)} \frac{N^{f\mu_t-1}_t}{N^{f\mu_{t-1}-1}_t} \left(\frac{k_{t-1} u_t g_{t-1}}{u_{t-1} AUX_ENDO_LAG_{37_1_{t-1}}} \right)^{\alpha(1-\gamma_I)} \quad (28)$$

$$\frac{\mu_t - 1}{\mu_t} N^{f(-\mu_t)}_t = BMEGA v_t \quad (29)$$

$$\mu_t = MUSS (1 + \epsilon_\mu (N^f_t - 1)) \quad (30)$$

$$\delta_t = DELSS + \delta'_t (u_t - USS) \quad (31)$$

$$\delta'_t = DELPRIMESS + \frac{(u_t - USS) DELPRIMESS \epsilon^{\delta'}}{USS} \quad (32)$$

$$g^i_t = g_t \frac{i_t}{i_{t-1}} \quad (33)$$

$$\frac{g^A_t z^a_t}{z^a_{t-1}} = \gamma^{yw\rho}_{t} \chi \left(\frac{s_t}{\psi_t} \right)^{\rho} + \phi \quad (34)$$

$$\gamma^{yw}_t = \frac{\zeta^y_{t-1} (1 - \omega^y_t) \kappa}{\zeta^r_{t-1} + 1 + \zeta^y_{t-1}} + \frac{\omega^w (1 - y^w)}{g^n_{t-1}} \gamma^{yw}_{t-1} \quad (35)$$

$$g^A_t = \phi + \phi \lambda_t (z^a_{t-1} - 1) \quad (36)$$

$$s_t = \phi \frac{g_{t+1}}{r_t} j_{t+1} \left(1 - \frac{z^a_{t-1} \phi}{g^A_t z^a_t} \right) \quad (37)$$

$$v_t = \frac{\gamma_I (1 - \frac{1}{\vartheta})}{\mu_t} + \frac{g_{t+1}}{g^A_t} \frac{\phi}{r_t} v_{t+1} \quad (38)$$

$$\varpi_t = \frac{\phi}{r_t} \frac{g_{t+1}}{g^A_t} z^a_{t-1} \lambda_t \epsilon_{\lambda} \left(v_{t+1} - \frac{j_{t+1}}{z^a_t} \right) \quad (39)$$

$$j_t = \frac{\phi}{r_t} z^a_{t-1} \frac{g_{t+1}}{g^A_t} \left(\lambda_t v_{t+1} + \frac{j_{t+1} (1 - \lambda_t)}{z^a_t} \right) - \varpi_t \quad (40)$$

$$\lambda_t = LAMSS \left(1 + \epsilon_{\lambda} \left(\frac{\varpi_t - VARPISS}{VARPISS} - \frac{z^a_{t-1} - ZASS}{ZASS} - \frac{\psi_t - PSISS}{PSISS} \right) \right) \quad (41)$$

$$\begin{aligned} \pi^A_t &= \frac{\gamma_I (1 - \frac{1}{\vartheta})}{\mu_t} - \phi j_t \left(1 - \frac{\phi AUX_ENDO_LAG_46_1_{t-1}}{g^A_{t-1} z^a_{t-1}} \right) \\ &\quad - \frac{r_{t-1} \varpi_{t-1} \left(1 - \frac{1}{AUX_ENDO_LAG_46_1_{t-1}} \right)}{g_t} \end{aligned} \quad (42)$$

$$\pi^{RD}_t = \phi j_t \left(1 - \frac{\phi AUX_ENDO_LAG_46_1_{t-1}}{g^A_{t-1} z^a_{t-1}} \right) - \frac{r_{t-1} s_{t-1}}{g_t} \quad (43)$$

$$\psi_t = v_t \quad (44)$$

$$r_t = 1 + r^k_{t+1} \quad (45)$$

$$\tilde{d}_t^r = \frac{fa^r_{t-1} \pi^F_t}{fa_{t-1}} \quad (46)$$

$$\tilde{d}_t^w = \frac{fa^w_{t-1} \pi^F_t}{fa_{t-1}} + SHINNOVW \left(\pi^A_t + \pi^{RD}_t \right) \quad (47)$$

$$b_t = s_t + \varpi_t \left(1 - \frac{1}{z^a_{t-1}} \right) \quad (48)$$

$$\begin{aligned} \pi^F_t = & \frac{k_{t-1}}{g_t} (1 + r^k_t) + \frac{r_{t-1} b_{t-1} + \mathfrak{F}_{t-1} r^*_{t-1}}{g_t} - \frac{r_{t-1} fa_{t-1}}{g_t} - k_t \\ & - b_t - \mathfrak{F}_t + fa_t + (\pi^A_t + \pi^{RD}_t) (1 - SHINNOVW) \end{aligned} \quad (49)$$

$$r_{t+1} - r^*_{t+1} = r_t - r^*_t \quad (50)$$

$$k_t = i_t + \frac{k_{t-1}}{g_t} (1 - \delta_t) \quad (51)$$

$$y_t = 1 - \frac{\gamma_I}{\mu_t \vartheta} - \psi_t N^f_t BMEGA \quad (52)$$

$$\mathfrak{F}_t = y_t - \left(he_t + \tilde{\tau}_t^E + \varpi_t \left(1 - \frac{1}{z^a_{t-1}} \right) + s_t + i_t + c_t \right) \quad (53)$$

$$c_t = c^w_t + c^r_t \quad (54)$$

$$fa_t = \mathfrak{F}_t + b_t + k_t \quad (55)$$

$$fa^r_t = tpe_t + \tilde{d}_t^r + \frac{r_{t-1} fa^r_{t-1}}{g_t} - c^r_t + (1 - \omega^w) \left(\tilde{d}_t^w + w_t + \frac{r_{t-1} fa^w_{t-1}}{g_t} - c^w_t - \tilde{\tau}_t \right) \quad (56)$$

$$fa_t = fa^r_t + fa^w_t \quad (57)$$

$$g_{dypc_t} = \frac{g_t \frac{y_t}{y_{t-1}}}{g^n_{t-1}} \quad (58)$$

$$g^y_t = g_t \frac{y_t}{y_{t-1}} \quad (59)$$

$$g^n_t = NSS + en_t \quad (60)$$

$$shareW_t = \frac{1}{\zeta^r_t + 1 + \zeta^y_t} \quad (61)$$

$$shareR_t = \frac{\zeta^r_t}{\zeta^r_t + 1 + \zeta^y_t} \quad (62)$$

$$\frac{1}{\zeta^r_t + 1 + \zeta^y_t} = \frac{1}{1 + ZETAYSS + ZETARSS} + ey_t \quad (63)$$

$$\frac{\zeta^r_t}{\zeta^r_t + 1 + \zeta^y_t} = \frac{ZETARSS}{1 + ZETAYSS + ZETARSS} + er_t \quad (64)$$

$$\begin{aligned} en_t = & shockn_t (gn_1 - NSS) + shockn_{t-1} (gn_2 - NSS) \\ & + (gn_3 - NSS) AUX_ENDO_LAG_66_1_{t-1} + (gn_4 - NSS) AUX_ENDO_LAG_66_2_{t-1} \\ & + (gn_5 - NSS) AUX_ENDO_LAG_66_3_{t-1} + (gn_6 - NSS) AUX_ENDO_LAG_66_4_{t-1} \\ & + (gn_7 - NSS) AUX_ENDO_LAG_66_5_{t-1} + (gn_8 - NSS) AUX_ENDO_LAG_66_6_{t-1} \\ & + (gn_9 - NSS) AUX_ENDO_LAG_66_7_{t-1} + (gn_10 - NSS) AUX_ENDO_LAG_66_8_{t-1} \\ & + (gn_11 - NSS) AUX_ENDO_LAG_66_9_{t-1} \\ & + (gn_12 - NSS) AUX_ENDO_LAG_66_10_{t-1} \\ & + (gn_13 - NSS) AUX_ENDO_LAG_66_11_{t-1} \\ & + (gn_14 - NSS) AUX_ENDO_LAG_66_12_{t-1} \\ & + (gn_15 - NSS) AUX_ENDO_LAG_66_13_{t-1} \\ & + (gn_16 - NSS) AUX_ENDO_LAG_66_14_{t-1} \\ & + (gn_17 - NSS) AUX_ENDO_LAG_66_15_{t-1} \\ & + (gn_18 - NSS) AUX_ENDO_LAG_66_16_{t-1} \\ & + (gn_19 - NSS) AUX_ENDO_LAG_66_17_{t-1} \\ & + (gn_20 - NSS) AUX_ENDO_LAG_66_18_{t-1} \\ & + (gn_21 - NSS) AUX_ENDO_LAG_66_19_{t-1} \\ & + (gn_22 - NSS) AUX_ENDO_LAG_66_20_{t-1} \\ & + (gn_23 - NSS) AUX_ENDO_LAG_66_21_{t-1} \\ & + (gn_24 - NSS) AUX_ENDO_LAG_66_22_{t-1} \\ & + (gn_25 - NSS) AUX_ENDO_LAG_66_23_{t-1} \\ & + (gn_26 - NSS) AUX_ENDO_LAG_66_24_{t-1} \\ & + (gn_27 - NSS) AUX_ENDO_LAG_66_25_{t-1} \\ & + (gn_28 - NSS) AUX_ENDO_LAG_66_26_{t-1} \\ & + (gn_29 - NSS) AUX_ENDO_LAG_66_27_{t-1} \\ & + (gn_30 - NSS) AUX_ENDO_LAG_66_28_{t-1} \\ & + (gn_31 - NSS) AUX_ENDO_LAG_66_29_{t-1} \\ & + (gn_32 - NSS) AUX_ENDO_LAG_66_30_{t-1} \\ & + (gn_33 - NSS) AUX_ENDO_LAG_66_31_{t-1} \\ & + (gn_34 - NSS) AUX_ENDO_LAG_66_32_{t-1} \\ & + (gn_35 - NSS) AUX_ENDO_LAG_66_33_{t-1} \\ & + (gn_36 - NSS) AUX_ENDO_LAG_66_34_{t-1} \\ & + (gn_37 - NSS) AUX_ENDO_LAG_66_35_{t-1} \\ & + (gn_38 - NSS) AUX_ENDO_LAG_66_36_{t-1} \\ & + (gn_39 - NSS) AUX_ENDO_LAG_66_37_{t-1} \\ & + (gn_40 - NSS) AUX_ENDO_LAG_66_38_{t-1} \end{aligned} \quad (65)$$

$$er_t = shockr_t \quad (66)$$

$$ey_t = shocky_t \quad (67)$$

$$\begin{aligned}
shocky_t = & shocky_{t-1} + delall_t dws_1 + dws_2 AUX_EXO_LAG_140_0_{t-1} \\
& + dws_3 AUX_EXO_LAG_140_1_{t-1} + dws_4 AUX_EXO_LAG_140_2_{t-1} \\
& + dws_5 AUX_EXO_LAG_140_3_{t-1} + dws_6 AUX_EXO_LAG_140_4_{t-1} \\
& + dws_7 AUX_EXO_LAG_140_5_{t-1} + dws_8 AUX_EXO_LAG_140_6_{t-1} \\
& + dws_9 AUX_EXO_LAG_140_7_{t-1} + dws_10 AUX_EXO_LAG_140_8_{t-1} \\
& + dws_11 AUX_EXO_LAG_140_9_{t-1} + dws_12 AUX_EXO_LAG_140_10_{t-1} \\
& + dws_13 AUX_EXO_LAG_140_11_{t-1} + dws_14 AUX_EXO_LAG_140_12_{t-1} \\
& + dws_15 AUX_EXO_LAG_140_13_{t-1} + dws_16 AUX_EXO_LAG_140_14_{t-1} \\
& + dws_17 AUX_EXO_LAG_140_15_{t-1} + dws_18 AUX_EXO_LAG_140_16_{t-1} \\
& + dws_19 AUX_EXO_LAG_140_17_{t-1} + dws_20 AUX_EXO_LAG_140_18_{t-1} \\
& + dws_21 AUX_EXO_LAG_140_19_{t-1} + dws_22 AUX_EXO_LAG_140_20_{t-1} \\
& + dws_23 AUX_EXO_LAG_140_21_{t-1} + dws_24 AUX_EXO_LAG_140_22_{t-1} \\
& + dws_25 AUX_EXO_LAG_140_23_{t-1} + dws_26 AUX_EXO_LAG_140_24_{t-1} \\
& + dws_27 AUX_EXO_LAG_140_25_{t-1} + dws_28 AUX_EXO_LAG_140_26_{t-1} \\
& + dws_29 AUX_EXO_LAG_140_27_{t-1} + dws_30 AUX_EXO_LAG_140_28_{t-1} \\
& + dws_31 AUX_EXO_LAG_140_29_{t-1} + dws_32 AUX_EXO_LAG_140_30_{t-1} \\
& + dws_33 AUX_EXO_LAG_140_31_{t-1} + dws_34 AUX_EXO_LAG_140_32_{t-1} \\
& + dws_35 AUX_EXO_LAG_140_33_{t-1} + dws_36 AUX_EXO_LAG_140_34_{t-1} \\
& + dws_37 AUX_EXO_LAG_140_35_{t-1} + dws_38 AUX_EXO_LAG_140_36_{t-1} \\
& + dws_39 AUX_EXO_LAG_140_37_{t-1} + dws_40 AUX_EXO_LAG_140_38_{t-1}
\end{aligned} \quad (68)$$

$$\begin{aligned}
shockr_t = & delall_t dws_1 + shockr_{t-1} + drs_2 AUX_EXO_LAG_140_0_{t-1} \\
& + drs_3 AUX_EXO_LAG_140_1_{t-1} + drs_4 AUX_EXO_LAG_140_2_{t-1} \\
& + drs_5 AUX_EXO_LAG_140_3_{t-1} + drs_6 AUX_EXO_LAG_140_4_{t-1} \\
& + drs_7 AUX_EXO_LAG_140_5_{t-1} + drs_8 AUX_EXO_LAG_140_6_{t-1} \\
& + drs_9 AUX_EXO_LAG_140_7_{t-1} + drs_10 AUX_EXO_LAG_140_8_{t-1} \\
& + drs_11 AUX_EXO_LAG_140_9_{t-1} + drs_12 AUX_EXO_LAG_140_10_{t-1} \\
& + drs_13 AUX_EXO_LAG_140_11_{t-1} + drs_14 AUX_EXO_LAG_140_12_{t-1} \\
& + drs_15 AUX_EXO_LAG_140_13_{t-1} + drs_16 AUX_EXO_LAG_140_14_{t-1} \\
& + drs_17 AUX_EXO_LAG_140_15_{t-1} + drs_18 AUX_EXO_LAG_140_16_{t-1} \\
& + drs_19 AUX_EXO_LAG_140_17_{t-1} + drs_20 AUX_EXO_LAG_140_18_{t-1} \\
& + drs_21 AUX_EXO_LAG_140_19_{t-1} + drs_22 AUX_EXO_LAG_140_20_{t-1} \\
& + drs_23 AUX_EXO_LAG_140_21_{t-1} + drs_24 AUX_EXO_LAG_140_22_{t-1} \\
& + drs_25 AUX_EXO_LAG_140_23_{t-1} + drs_26 AUX_EXO_LAG_140_24_{t-1} \\
& + drs_27 AUX_EXO_LAG_140_25_{t-1} + drs_28 AUX_EXO_LAG_140_26_{t-1} \\
& + drs_29 AUX_EXO_LAG_140_27_{t-1} + drs_30 AUX_EXO_LAG_140_28_{t-1} \\
& + drs_31 AUX_EXO_LAG_140_29_{t-1} + drs_32 AUX_EXO_LAG_140_30_{t-1} \\
& + drs_33 AUX_EXO_LAG_140_31_{t-1} + drs_34 AUX_EXO_LAG_140_32_{t-1} \\
& + drs_35 AUX_EXO_LAG_140_33_{t-1} + drs_36 AUX_EXO_LAG_140_34_{t-1} \\
& + drs_37 AUX_EXO_LAG_140_35_{t-1} + drs_38 AUX_EXO_LAG_140_36_{t-1} \\
& + drs_39 AUX_EXO_LAG_140_37_{t-1} + drs_40 AUX_EXO_LAG_140_38_{t-1}
\end{aligned} \quad (69)$$

$$shockn_t = delall_t \quad (70)$$

$$h^{w*}_t = w^*_t + \frac{\omega^{w*}}{r^*_t \mathfrak{Z}^*_t} \frac{g^*_{t+1}}{g^{w*}_t} h^{w*}_{t+1} \quad (71)$$

$$\tilde{T}^{w*}_t = \tilde{\tau}^*_t + \frac{\omega^{w*}}{r^*_t \mathfrak{Z}^*_t} \frac{g^*_{t+1}}{g^{w*}_t} \tilde{T}^{w*}_{t+1} \quad (72)$$

$$\tilde{D}^{r*}_t = \tilde{d}^{r*}_t + \frac{g^*_{t+1} \tilde{D}^{r*}_{t+1} \gamma^*_t \zeta^{r*}_{t-1}}{g^{w*}_t r^*_t \zeta^{r*}_t} \quad (73)$$

$$ay^*_t = \frac{1}{n^*_p} w^*_{t-1} (1 - \omega^{w*}) + \frac{\left(1 - \frac{1}{n^*_p}\right) ay^*_{t-1} AUX_ENDO_LAG_95_1_{t-1}}{g^*_t} \quad (74)$$

$$tpe^*_t = ay^*_t \eta^{r*} + \gamma^*_{t-1} \frac{g^{\xi*}_{t-1}}{g^*_t} tpe^*_{t-1} \quad (75)$$

$$Pe^*_t = tpe^*_t + \frac{\zeta^{r*}_{t-1} g^*_{t+1} \gamma^*_t Pe^*_{t+1}}{g^{w*}_t r^*_t \zeta^{r*}_t} \quad (76)$$

$$\tilde{D}^{w*}_t = \tilde{d}^{w*}_t + \frac{\omega^{w*}}{r^*_t \mathfrak{Z}^*_t} \frac{g^*_{t+1}}{g^{w*}_t} \tilde{D}^{w*}_{t+1} + \frac{(1 - \omega^{w*}) \epsilon^{*\frac{\rho^*_U - 1}{\rho^*_U}}_{t+1}}{r^*_t \mathfrak{Z}^*_t} \frac{g^*_{t+1}}{g^{w*}_t \zeta^{r*}_t} \left(\tilde{D}^{r*}_{t+1} + Pe^*_{t+1} \right) \quad (77)$$

$$c^{w*}_t = \varsigma^*_t \left(\tilde{D}^{w*}_t + h^{w*}_t + \frac{r^*_{t-1} fa^{w*}_{t-1}}{g^*_t} - \tilde{T}^{w*}_t \right) \quad (78)$$

$$c^{r*}_t = \varsigma^*_t \epsilon^*_t \left(Pe^*_t + \tilde{D}^{r*}_t + \frac{r^*_{t-1} fa^{r*}_{t-1}}{g^*_t} \right) \quad (79)$$

$$1 - \varsigma^*_t \epsilon^*_t = \frac{\gamma^*_t (r^*_t \beta^*)^{\frac{1}{1 - \rho^*_U}}}{r^*_t} \frac{\varsigma^*_t \epsilon^*_t}{\epsilon^*_{t+1} \varsigma^*_{t+1}} \quad (80)$$

$$1 - \varsigma^*_t = \frac{(\mathfrak{Z}^*_t r^*_t \beta^*)^{\frac{1}{1 - \rho^*_U}}}{r^*_t \mathfrak{Z}^*_t} \frac{\varsigma^*_t}{\varsigma^*_{t+1}} \quad (81)$$

$$\mathfrak{Z}^*_t = \omega^{w*} + (1 - \omega^{w*}) \epsilon^{*\frac{\rho^*_U - 1}{\rho^*_U}}_{t+1} \quad (82)$$

$$he^*_t = \delta_{HE}^* \frac{\zeta^{r^*}_{t-1}}{1 + \zeta^{r^*}_{t-1} + \zeta^{y^*}_{t-1}} \quad (83)$$

$$\tilde{\tau}^{A^*}_t = tpe^*_t + he^*_t \quad (84)$$

$$\tilde{\tau}^{E^*}_t = w^*_t i^{y^*}_t \quad (85)$$

$$\tilde{\tau}^*_t = \tilde{\tau}^{A^*}_t + \tilde{\tau}^{E^*}_t \quad (86)$$

$$g^{w^*}_t = \omega^{w^*} + \zeta^{y^*}_{t-1} (1 - \omega^{y^*}_t) \quad (87)$$

$$n^*_t = g^{w^*}_t \frac{\zeta^{y^*}_t}{\zeta^{y^*}_{t-1}} \quad (88)$$

$$g^{w^*}_t \zeta^{r^*}_t = 1 - \omega^{w^*} + \gamma^*_t \zeta^{r^*}_{t-1} \quad (89)$$

$$g^{n^*}_t = (g^{w^*}_t \zeta^{r^*}_t + g^{w^*}_t + \zeta^{y^*}_{t-1} n^*_t) (1 + \zeta^{r^*}_{t-1} + \zeta^{y^*}_{t-1})^{(-1)} \quad (90)$$

$$g^{\xi^*}_t = \frac{\omega^{w^*} + \zeta^{y^*}_{t-1} (1 - \omega^{y^*}_t) \left(\rho_E^* + \frac{\chi_E^*}{2} i^{y^*2}_t \right)}{g^{w^*}_t} \quad (91)$$

$$\varsigma_t^* \frac{(-1)}{\rho_U^*} = \frac{g^*_{t+1} i^{y^*}_t \chi_E^* \zeta^{y^*}_{t-1} (1 - \omega^{y^*}_t) \beta^* \varsigma_t^* \frac{(-1)}{\rho_U^*} w^*_{t+1}}{w^*_t g^{w^*}_t} \quad (92)$$

$$fert^*_t = n^*_t - \omega^{y^*}_t \quad (93)$$

$$(1 - \alpha^*) (1 - \gamma_I^*) = w^*_t \mu^*_t \quad (94)$$

$$\alpha^* (1 - \gamma_I^*) = \mu^*_t (r^{k^*}_t + \delta^*_t) \frac{k^*_{t-1}}{g^*_t} \quad (95)$$

$$\alpha^* (1 - \gamma_I^*) = \frac{k^*_{t-1}}{g^*_t} \mu^*_t \delta'^*_{t-1} u^*_t \quad (96)$$

$$g^*_t = \frac{\mu^*_t}{\mu^*_{t-1}} g^{M^*}_t g^{A^*1-\vartheta^*}_{t-1} \quad (97)$$

$$g^*_t = g^{M^* \gamma_I^*}_t (g^{\xi^*}_{t-1} g^{w^*}_{t-1})^{(1-\alpha^*)(1-\gamma_I^*)} \frac{N f^*_{t-1} \mu^*_{t-1}}{N f^*_{t-1} \mu^*_{t-1}} \left(\frac{k^*_{t-1} u^*_t g^*_{t-1}}{u^*_{t-1} AUX_ENDO_LAG_106_1_{t-1}} \right)^{\alpha^* (1-\gamma_I^*)} \quad (98)$$

$$\frac{\mu^*_t - 1}{\mu^*_t} N^{f^*}_t (-\mu^*_t) = BMEGA^* v^*_t \quad (99)$$

$$\mu^*_t = MUSS^* (1 + \epsilon^*_\mu (N^{f^*}_t - 1)) \quad (100)$$

$$\delta^*_t = DELSS^* + \delta'^*_t (u^*_t - USS^*) \quad (101)$$

$$\delta'^*_t = DELPRIMESS^* + \frac{(u^*_t - USS^*) DELPRIMESS^* \epsilon^{\delta^*}_t}{USS^*} \quad (102)$$

$$g^{i^*}_t = g^*_t \frac{i^*_t}{i^*_{t-1}} \quad (103)$$

$$\frac{g^{A^*}_t z^{a^*}_t}{z^{a^*}_{t-1}} = \gamma^{yw^*}_t \rho^{yw^*}_t \chi^* \left(\frac{s^*_t}{\psi^*_t} \right)^{\rho^*} + \phi^* \quad (104)$$

$$\gamma^{yw^*}_t = \frac{\zeta^{y^*}_{t-1} (1 - \omega^{y^*}_t) \kappa^*}{\zeta^{r^*}_{t-1} + 1 + \zeta^{y^*}_{t-1}} + \frac{\omega^{w^*} (1 - y^{w^*})}{g^{n^*}_{t-1}} \gamma^{yw^*}_{t-1} \quad (105)$$

$$g^{A^*}_t = \phi^* + \phi^* \lambda^*_t (z^{a^*}_{t-1} - 1) \quad (106)$$

$$s^*_t = \phi^* \frac{g^*_{t+1}}{r^*_t} j^*_{t+1} \left(1 - \frac{z^{a^*}_{t-1} \phi^*}{g^{A^*}_t z^{a^*}_t} \right) \quad (107)$$

$$v^*_t = \frac{\gamma^*_I (1 - \frac{1}{\vartheta^*})}{\mu^*_t} + \frac{g^*_{t+1}}{g^{A^*}_t} \frac{\phi^*}{r^*_t} v^*_{t+1} \quad (108)$$

$$\varpi^*_t = \frac{\phi^*}{r^*_t} \frac{g^*_{t+1}}{g^{A^*}_t} z^{a^*}_{t-1} \lambda^*_t \epsilon^*_\lambda \left(v^*_{t+1} - \frac{j^*_{t+1}}{z^{a^*}_t} \right) \quad (109)$$

$$j^*_t = \frac{\phi^*}{r^*_t} z^{a^*}_{t-1} \frac{g^*_{t+1}}{g^{A^*}_t} \left(\lambda^*_t v^*_{t+1} + \frac{j^*_{t+1} (1 - \lambda^*_t)}{z^{a^*}_t} \right) - \varpi^*_t \quad (110)$$

$$\lambda^*_t = LAMSS^* \left(1 + \epsilon^*_\lambda \left(\frac{\varpi^*_t - VARPISS^*}{VARPISS^*} - \frac{z^{a^*}_{t-1} - ZASS^*}{ZASS^*} - \frac{\psi^*_t - PSISS^*}{PSISS^*} \right) \right) \quad (111)$$

$$\pi^{A^*}_t = \frac{\gamma^*_I (1 - \frac{1}{\vartheta^*})}{\mu^*_t} - \phi^* j^*_t \left(1 - \frac{\phi^* AUX_ENDO_LAG_115_1_{t-1}}{g^{A^*}_{t-1} z^{a^*}_{t-1}} \right) - \frac{r^*_{t-1} \varpi^*_{t-1} \left(1 - \frac{1}{AUX_ENDO_LAG_115_1_{t-1}} \right)}{g^*_t} \quad (112)$$

$$\pi^{RD*}_t = \phi^* j^*_t \left(1 - \frac{\phi^* AUX_ENDO_LAG_115_1_{t-1}}{g^{A*}_{t-1} z^{a*}_{t-1}} \right) - \frac{r^*_{t-1} s^*_{t-1}}{g^*_t} \quad (113)$$

$$\psi^*_t = v^*_t \quad (114)$$

$$r^*_t = 1 + r^{k*}_{t+1} \quad (115)$$

$$\tilde{d}^{r*}_t = \frac{fa^{r*}_{t-1} \pi^{F*}_t}{fa^*_{t-1}} \quad (116)$$

$$\tilde{d}^{w*}_t = \frac{fa^{w*}_{t-1} \pi^{F*}_t}{fa^*_{t-1}} + SHINNOVW^* (\pi^{A*}_t + \pi^{RD*}_t) \quad (117)$$

$$b^*_t = s^*_t + \varpi^*_t \left(1 - \frac{1}{z^{a*}_{t-1}} \right) \quad (118)$$

$$\begin{aligned} \pi^{F*}_t &= \frac{k^*_{t-1}}{g^*_t} (1 + r^{k*}_t) + \frac{r^*_{t-1} b^*_{t-1} - r_{t-1} \frac{g_{t-1} \mathfrak{F}_{t-1} \mathfrak{G}_t}{g^*_{t-1}}}{g^*_t} - \frac{r^*_{t-1} fa^*_{t-1}}{g^*_t} - k^*_t \\ &\quad - b^*_t + \frac{g_t \mathfrak{F}_t \mathfrak{G}_t}{g^*_t} + fa^*_t + (\pi^{A*}_t + \pi^{RD*}_t) (1 - SHINNOVW^*) \end{aligned} \quad (119)$$

$$k^*_t = i^*_t + \frac{k^*_{t-1}}{g^*_t} (1 - \delta^*_t) \quad (120)$$

$$y^*_t = 1 - \frac{\gamma^*_I}{\mu^*_t \vartheta^*} - \psi^*_t N^{f*}_t BMEGA^* \quad (121)$$

$$\mathfrak{G}_t = \mathfrak{K} \left(delall_t + \frac{g_{t-1}}{g^*_{t-1}} AUX_EXO_LAG_140_0_{t-1} \right. \quad (122)$$

$$\begin{aligned} & + \frac{\frac{g_{t-1}}{g^*_{t-1}} AUX_ENDO_LAG_27_1_{t-1}}{AUX_ENDO_LAG_96_1_{t-1}} AUX_EXO_LAG_140_1_{t-1} \\ & + \frac{\frac{\frac{g_{t-1}}{g^*_{t-1}} AUX_ENDO_LAG_27_1_{t-1}}{AUX_ENDO_LAG_96_1_{t-1}} AUX_ENDO_LAG_27_2_{t-1}}{AUX_ENDO_LAG_96_2_{t-1}} AUX_EXO_LAG_140_2_{t-1} \\ & + \frac{\frac{\frac{\frac{g_{t-1}}{g^*_{t-1}} AUX_ENDO_LAG_27_1_{t-1}}{AUX_ENDO_LAG_96_1_{t-1}} AUX_ENDO_LAG_27_2_{t-1}}{AUX_ENDO_LAG_96_2_{t-1}} \frac{34}{34} AUX_ENDO_LAG_27_3_{t-1}}{AUX_ENDO_LAG_96_3_{t-1}} AUX_EXO_LAG_140_3_{t-1} \\ & + \frac{\frac{g_{t-1}}{g^*_{t-1}} AUX_ENDO_LAG_27_1_{t-1}}{AUX_ENDO_LAG_96_1_{t-1}} \end{aligned}$$

$$\frac{g_t \mathfrak{F}_t (-\mathfrak{G}_t)}{g_t^*} = y_t^* - \left(h e_t^* + \tilde{\tau}^{E*}_t + \varpi_t^* \left(1 - \frac{1}{z^{a*}_{t-1}} \right) + s_t^* + i_t^* + c_t^* \right) \quad (123)$$

$$c_t^* = c^{w*}_t + c^{r*}_t \quad (124)$$

$$fa_t^* = b_t^* + k_t^* - \frac{g_t \mathfrak{F}_t \mathfrak{G}_t}{g_t^*} \quad (125)$$

$$fa^{r*}_t = tpe_t^* + \tilde{d}^{r*}_t + \frac{r_{t-1}^* fa^{r*}_{t-1}}{g_t^*} - c^{r*}_t + (1 - \omega^{w*}) \left(\tilde{d}^{w*}_t + w_t^* + \frac{r_{t-1}^* fa^{w*}_{t-1}}{g_t^*} - c^{w*}_t - \tilde{\tau}_t^* \right) \quad (126)$$

$$fa_t^* = fa^{r*}_t + fa^{w*}_t \quad (127)$$

$$g_{dypt}^* = \frac{g_{t-1}^* \frac{y_t^*}{y_{t-1}^*}}{g_{t-1}^{n*}} \quad (128)$$

$$g^{y*}_t = g_t^* \frac{y_t^*}{y_{t-1}^*} \quad (129)$$

$$g^{n*}_t = NSS^* + en_t^* \quad (130)$$

$$shareW_t^* = \frac{1}{\zeta^{r*}_t + 1 + \zeta^{y*}_t} \quad (131)$$

$$shareR_t^* = \frac{\zeta^{r*}_t}{\zeta^{r*}_t + 1 + \zeta^{y*}_t} \quad (132)$$

$$\frac{1}{\zeta^{r*}_t + 1 + \zeta^{y*}_t} = \frac{1}{1 + ZETAYSS^* + ZETARSS^*} + ey_t^* \quad (133)$$

$$\frac{\zeta^{r*}_t}{\zeta^{r*}_t + 1 + \zeta^{y*}_t} = er_t + \frac{ZETARSS^*}{1 + ZETAYSS^* + ZETARSS^*} \quad (134)$$

$$\begin{aligned}
en^*_t = & shockn^*_t (gn_1_star - NSS^*) + shockn^*_{t-1} (gn_2_star - NSS^*) \\
& + (gn_3_star - NSS^*) AUX_ENDO_LAG_135_1_{t-1} \\
& + (gn_4_star - NSS^*) AUX_ENDO_LAG_135_2_{t-1} \\
& + (gn_5_star - NSS^*) AUX_ENDO_LAG_135_3_{t-1} \\
& + (gn_6_star - NSS^*) AUX_ENDO_LAG_135_4_{t-1} \\
& + (gn_7_star - NSS^*) AUX_ENDO_LAG_135_5_{t-1} \\
& + (gn_8_star - NSS^*) AUX_ENDO_LAG_135_6_{t-1} \\
& + (gn_9_star - NSS^*) AUX_ENDO_LAG_135_7_{t-1} \\
& + (gn_10_star - NSS^*) AUX_ENDO_LAG_135_8_{t-1} \\
& + (gn_11_star - NSS^*) AUX_ENDO_LAG_135_9_{t-1} \\
& + (gn_12_star - NSS^*) AUX_ENDO_LAG_135_10_{t-1} \\
& + (gn_13_star - NSS^*) AUX_ENDO_LAG_135_11_{t-1} \\
& + (gn_14_star - NSS^*) AUX_ENDO_LAG_135_12_{t-1} \\
& + (gn_15_star - NSS^*) AUX_ENDO_LAG_135_13_{t-1} \\
& + (gn_16_star - NSS^*) AUX_ENDO_LAG_135_14_{t-1} \\
& + (gn_17_star - NSS^*) AUX_ENDO_LAG_135_15_{t-1} \\
& + (gn_18_star - NSS^*) AUX_ENDO_LAG_135_16_{t-1} \\
& + (gn_19_star - NSS^*) AUX_ENDO_LAG_135_17_{t-1} \\
& + (gn_20_star - NSS^*) AUX_ENDO_LAG_135_18_{t-1} \\
& + (gn_21_star - NSS^*) AUX_ENDO_LAG_135_19_{t-1} \\
& + (gn_22_star - NSS^*) AUX_ENDO_LAG_135_20_{t-1} \\
& + (gn_23_star - NSS^*) AUX_ENDO_LAG_135_21_{t-1} \\
& + (gn_24_star - NSS^*) AUX_ENDO_LAG_135_22_{t-1} \\
& + (gn_25_star - NSS^*) AUX_ENDO_LAG_135_23_{t-1} \\
& + (gn_26_star - NSS^*) AUX_ENDO_LAG_135_24_{t-1} \\
& + (gn_27_star - NSS^*) AUX_ENDO_LAG_135_25_{t-1} \\
& + (gn_28_star - NSS^*) AUX_ENDO_LAG_135_26_{t-1} \\
& + (gn_29_star - NSS^*) AUX_ENDO_LAG_135_27_{t-1} \\
& + (gn_30_star - NSS^*) AUX_ENDO_LAG_135_28_{t-1} \\
& + (gn_31_star - NSS^*) AUX_ENDO_LAG_135_29_{t-1} \\
& + (gn_32_star - NSS^*) AUX_ENDO_LAG_135_30_{t-1} \\
& + (gn_33_star - NSS^*) AUX_ENDO_LAG_135_31_{t-1} \\
& + (gn_34_star - NSS^*) AUX_ENDO_LAG_135_32_{t-1} \\
& + (gn_35_star - NSS^*) AUX_ENDO_LAG_135_33_{t-1} \\
& + (gn_36_star - NSS^*) AUX_ENDO_LAG_135_34_{t-1} \\
& + (gn_37_star - NSS^*) AUX_ENDO_LAG_135_35_{t-1} \\
& + (gn_38_star - NSS^*) AUX_ENDO_LAG_135_36_{t-1} \\
& + (gn_39_star - NSS^*) AUX_ENDO_LAG_135_37_{t-1} \\
& + (gn_40_star - NSS^*) AUX_ENDO_LAG_135_38_{t-1}
\end{aligned} \tag{135}$$

$$er^*_t = shockr^*_t \tag{136}$$

$$ey^*_t = shocky^*_t \tag{137}$$

$$\begin{aligned}
shocky^*_t = & shocky^*_{t-1} + delall_t dws.1.star + dws.2.star AUX_EXO_LAG_140.0_{t-1} \\
& + dws.3.star AUX_EXO_LAG_140.1_{t-1} + dws.4.star AUX_EXO_LAG_140.2_{t-1} \\
& + dws.5.star AUX_EXO_LAG_140.3_{t-1} + dws.6.star AUX_EXO_LAG_140.4_{t-1} \\
& + dws.7.star AUX_EXO_LAG_140.5_{t-1} + dws.8.star AUX_EXO_LAG_140.6_{t-1} \\
& + dws.9.star AUX_EXO_LAG_140.7_{t-1} + dws.10.star AUX_EXO_LAG_140.8_{t-1} \\
& + dws.11.star AUX_EXO_LAG_140.9_{t-1} + dws.12.star AUX_EXO_LAG_140.10_{t-1} \\
& + dws.13.star AUX_EXO_LAG_140.11_{t-1} + dws.14.star AUX_EXO_LAG_140.12_{t-1} \\
& + dws.15.star AUX_EXO_LAG_140.13_{t-1} + dws.16.star AUX_EXO_LAG_140.14_{t-1} \\
& + dws.17.star AUX_EXO_LAG_140.15_{t-1} + dws.18.star AUX_EXO_LAG_140.16_{t-1} \\
& + dws.19.star AUX_EXO_LAG_140.17_{t-1} + dws.20.star AUX_EXO_LAG_140.18_{t-1} \\
& + dws.21.star AUX_EXO_LAG_140.19_{t-1} + dws.22.star AUX_EXO_LAG_140.20_{t-1} \\
& + dws.23.star AUX_EXO_LAG_140.21_{t-1} + dws.24.star AUX_EXO_LAG_140.22_{t-1} \\
& + dws.25.star AUX_EXO_LAG_140.23_{t-1} + dws.26.star AUX_EXO_LAG_140.24_{t-1} \\
& + dws.27.star AUX_EXO_LAG_140.25_{t-1} + dws.28.star AUX_EXO_LAG_140.26_{t-1} \\
& + dws.29.star AUX_EXO_LAG_140.27_{t-1} + dws.30.star AUX_EXO_LAG_140.28_{t-1} \\
& + dws.31.star AUX_EXO_LAG_140.29_{t-1} + dws.32.star AUX_EXO_LAG_140.30_{t-1} \\
& + dws.33.star AUX_EXO_LAG_140.31_{t-1} + dws.34.star AUX_EXO_LAG_140.32_{t-1} \\
& + dws.35.star AUX_EXO_LAG_140.33_{t-1} + dws.36.star AUX_EXO_LAG_140.34_{t-1} \\
& + dws.37.star AUX_EXO_LAG_140.35_{t-1} + dws.38.star AUX_EXO_LAG_140.36_{t-1} \\
& + dws.39.star AUX_EXO_LAG_140.37_{t-1} + dws.40.star AUX_EXO_LAG_140.38_{t-1} \\
& \hspace{10em} (138)
\end{aligned}$$

$$\begin{aligned}
shockr^*_t = & delall_t dws.1.star + shockr^*_{t-1} + drs.2.star AUX_EXO_LAG_140.0_{t-1} \\
& + drs.3.star AUX_EXO_LAG_140.1_{t-1} + drs.4.star AUX_EXO_LAG_140.2_{t-1} \\
& + drs.5.star AUX_EXO_LAG_140.3_{t-1} + drs.6.star AUX_EXO_LAG_140.4_{t-1} \\
& + drs.7.star AUX_EXO_LAG_140.5_{t-1} + drs.8.star AUX_EXO_LAG_140.6_{t-1} \\
& + drs.9.star AUX_EXO_LAG_140.7_{t-1} + drs.10.star AUX_EXO_LAG_140.8_{t-1} \\
& + drs.11.star AUX_EXO_LAG_140.9_{t-1} + drs.12.star AUX_EXO_LAG_140.10_{t-1} \\
& + drs.13.star AUX_EXO_LAG_140.11_{t-1} + drs.14.star AUX_EXO_LAG_140.12_{t-1} \\
& + drs.15.star AUX_EXO_LAG_140.13_{t-1} + drs.16.star AUX_EXO_LAG_140.14_{t-1} \\
& + drs.17.star AUX_EXO_LAG_140.15_{t-1} + drs.18.star AUX_EXO_LAG_140.16_{t-1} \\
& + drs.19.star AUX_EXO_LAG_140.17_{t-1} + drs.20.star AUX_EXO_LAG_140.18_{t-1} \\
& + drs.21.star AUX_EXO_LAG_140.19_{t-1} + drs.22.star AUX_EXO_LAG_140.20_{t-1} \\
& + drs.23.star AUX_EXO_LAG_140.21_{t-1} + drs.24.star AUX_EXO_LAG_140.22_{t-1} \\
& + drs.25.star AUX_EXO_LAG_140.23_{t-1} + drs.26.star AUX_EXO_LAG_140.24_{t-1} \\
& + drs.27.star AUX_EXO_LAG_140.25_{t-1} + drs.28.star AUX_EXO_LAG_140.26_{t-1} \\
& + drs.29.star AUX_EXO_LAG_140.27_{t-1} + drs.30.star AUX_EXO_LAG_140.28_{t-1} \\
& + drs.31.star AUX_EXO_LAG_140.29_{t-1} + drs.32.star AUX_EXO_LAG_140.30_{t-1} \\
& + drs.33.star AUX_EXO_LAG_140.31_{t-1} + drs.34.star AUX_EXO_LAG_140.32_{t-1} \\
& + drs.35.star AUX_EXO_LAG_140.33_{t-1} + drs.36.star AUX_EXO_LAG_140.34_{t-1} \\
& + drs.37.star AUX_EXO_LAG_140.35_{t-1} + drs.38.star AUX_EXO_LAG_140.36_{t-1} \\
& + drs.39.star AUX_EXO_LAG_140.37_{t-1} + drs.40.star AUX_EXO_LAG_140.38_{t-1} \\
& \hspace{10em} (139)
\end{aligned}$$

$$shockn^*_t = delall_t \hspace{10em} (140)$$

$$AUX_ENDO_LAG_26.1_t = g^w_{t-1} \hspace{10em} (141)$$

$$AUX_ENDO_LAG_37_1_t = k_{t-1} \quad (142)$$

$$AUX_ENDO_LAG_46_1_t = z^a_{t-1} \quad (143)$$

$$AUX_ENDO_LAG_66_1_t = shockn_{t-1} \quad (144)$$

$$AUX_ENDO_LAG_66_2_t = AUX_ENDO_LAG_66_1_{t-1} \quad (145)$$

$$AUX_ENDO_LAG_66_3_t = AUX_ENDO_LAG_66_2_{t-1} \quad (146)$$

$$AUX_ENDO_LAG_66_4_t = AUX_ENDO_LAG_66_3_{t-1} \quad (147)$$

$$AUX_ENDO_LAG_66_5_t = AUX_ENDO_LAG_66_4_{t-1} \quad (148)$$

$$AUX_ENDO_LAG_66_6_t = AUX_ENDO_LAG_66_5_{t-1} \quad (149)$$

$$AUX_ENDO_LAG_66_7_t = AUX_ENDO_LAG_66_6_{t-1} \quad (150)$$

$$AUX_ENDO_LAG_66_8_t = AUX_ENDO_LAG_66_7_{t-1} \quad (151)$$

$$AUX_ENDO_LAG_66_9_t = AUX_ENDO_LAG_66_8_{t-1} \quad (152)$$

$$AUX_ENDO_LAG_66_10_t = AUX_ENDO_LAG_66_9_{t-1} \quad (153)$$

$$AUX_ENDO_LAG_66_11_t = AUX_ENDO_LAG_66_10_{t-1} \quad (154)$$

$$AUX_ENDO_LAG_66_12_t = AUX_ENDO_LAG_66_11_{t-1} \quad (155)$$

$$AUX_ENDO_LAG_66_13_t = AUX_ENDO_LAG_66_12_{t-1} \quad (156)$$

$$AUX_ENDO_LAG_66_14_t = AUX_ENDO_LAG_66_13_{t-1} \quad (157)$$

$$AUX_ENDO_LAG_66_15_t = AUX_ENDO_LAG_66_14_{t-1} \quad (158)$$

$$AUX_ENDO_LAG_66_16_t = AUX_ENDO_LAG_66_15_{t-1} \quad (159)$$

$$AUX_ENDO_LAG_66_17_t = AUX_ENDO_LAG_66_16_{t-1} \quad (160)$$

$$AUX_ENDO_LAG_66_18_t = AUX_ENDO_LAG_66_17_{t-1} \quad (161)$$

$$AUX_ENDO_LAG_66_19_t = AUX_ENDO_LAG_66_18_{t-1} \quad (162)$$

$$AUX_ENDO_LAG_66_20_t = AUX_ENDO_LAG_66_19_{t-1} \quad (163)$$

$$AUX_ENDO_LAG_66_21_t = AUX_ENDO_LAG_66_20_{t-1} \quad (164)$$

$$AUX_ENDO_LAG_66_22_t = AUX_ENDO_LAG_66_21_{t-1} \quad (165)$$

$$AUX_ENDO_LAG_66_23_t = AUX_ENDO_LAG_66_22_{t-1} \quad (166)$$

$$AUX_ENDO_LAG_66_24_t = AUX_ENDO_LAG_66_23_{t-1} \quad (167)$$

$$AUX_ENDO_LAG_66_25_t = AUX_ENDO_LAG_66_24_{t-1} \quad (168)$$

$$AUX_ENDO_LAG_66_26_t = AUX_ENDO_LAG_66_25_{t-1} \quad (169)$$

$$AUX_ENDO_LAG_66_27_t = AUX_ENDO_LAG_66_26_{t-1} \quad (170)$$

$$AUX_ENDO_LAG_66_28_t = AUX_ENDO_LAG_66_27_{t-1} \quad (171)$$

$$AUX_ENDO_LAG_66_29_t = AUX_ENDO_LAG_66_28_{t-1} \quad (172)$$

$$AUX_ENDO_LAG_66_30_t = AUX_ENDO_LAG_66_29_{t-1} \quad (173)$$

$$AUX_ENDO_LAG_66_31_t = AUX_ENDO_LAG_66_30_{t-1} \quad (174)$$

$$AUX_ENDO_LAG_66_32_t = AUX_ENDO_LAG_66_31_{t-1} \quad (175)$$

$$AUX_ENDO_LAG_66_33_t = AUX_ENDO_LAG_66_32_{t-1} \quad (176)$$

$$AUX_ENDO_LAG_66_34_t = AUX_ENDO_LAG_66_33_{t-1} \quad (177)$$

$$AUX_ENDO_LAG_66_35_t = AUX_ENDO_LAG_66_34_{t-1} \quad (178)$$

$$AUX_ENDO_LAG_66_36_t = AUX_ENDO_LAG_66_35_{t-1} \quad (179)$$

$$AUX_ENDO_LAG_66_37_t = AUX_ENDO_LAG_66_36_{t-1} \quad (180)$$

$$AUX_ENDO_LAG_66_38_t = AUX_ENDO_LAG_66_37_{t-1} \quad (181)$$

$$AUX_ENDO_LAG_95_1_t = g^{w*}_{t-1} \quad (182)$$

$$AUX_ENDO_LAG_106_1_t = k^*_{t-1} \quad (183)$$

$$AUX_ENDO_LAG_115_1_t = z^{a*}_{t-1} \quad (184)$$

$$AUX_ENDO_LAG_27_1_t = g_{t-1} \quad (185)$$

$$AUX_ENDO_LAG_96_1_t = g^*_{t-1} \quad (186)$$

$$AUX_ENDO_LAG_27_2_t = AUX_ENDO_LAG_27_1_{t-1} \quad (187)$$

$$AUX_ENDO_LAG_96_2_t = AUX_ENDO_LAG_96_1_{t-1} \quad (188)$$

$$AUX_ENDO_LAG_27_3_t = AUX_ENDO_LAG_27_2_{t-1} \quad (189)$$

$$AUX_ENDO_LAG_96_3_t = AUX_ENDO_LAG_96_2_{t-1} \quad (190)$$

$$AUX_ENDO_LAG_27_4_t = AUX_ENDO_LAG_27_3_{t-1} \quad (191)$$

$$AUX_ENDO_LAG_96_4_t = AUX_ENDO_LAG_96_3_{t-1} \quad (192)$$

$$AUX_ENDO_LAG_27_5_t = AUX_ENDO_LAG_27_4_{t-1} \quad (193)$$

$$AUX_ENDO_LAG_96_5_t = AUX_ENDO_LAG_96_4_{t-1} \quad (194)$$

$$AUX_ENDO_LAG_27_6_t = AUX_ENDO_LAG_27_5_{t-1} \quad (195)$$

$$AUX_ENDO_LAG_96_6_t = AUX_ENDO_LAG_96_5_{t-1} \quad (196)$$

$$AUX_ENDO_LAG_27_7_t = AUX_ENDO_LAG_27_6_{t-1} \quad (197)$$

$$AUX_ENDO_LAG_96_7_t = AUX_ENDO_LAG_96_6_{t-1} \quad (198)$$

$$AUX_ENDO_LAG_27_8_t = AUX_ENDO_LAG_27_7_{t-1} \quad (199)$$

$$AUX_ENDO_LAG_96_8_t = AUX_ENDO_LAG_96_7_{t-1} \quad (200)$$

$$AUX_ENDO_LAG_27_9_t = AUX_ENDO_LAG_27_8_{t-1} \quad (201)$$

$$AUX_ENDO_LAG_96_9_t = AUX_ENDO_LAG_96_8_{t-1} \quad (202)$$

$$AUX_ENDO_LAG_27_10_t = AUX_ENDO_LAG_27_9_{t-1} \quad (203)$$

$$AUX_ENDO_LAG_96_10_t = AUX_ENDO_LAG_96_9_{t-1} \quad (204)$$

$$AUX_ENDO_LAG_27_11_t = AUX_ENDO_LAG_27_10_{t-1} \quad (205)$$

$$AUX_ENDO_LAG_96_11_t = AUX_ENDO_LAG_96_10_{t-1} \quad (206)$$

$$AUX_ENDO_LAG_27_12_t = AUX_ENDO_LAG_27_11_{t-1} \quad (207)$$

$$AUX_ENDO_LAG_96_12_t = AUX_ENDO_LAG_96_11_{t-1} \quad (208)$$

$$AUX_ENDO_LAG_27_13_t = AUX_ENDO_LAG_27_12_{t-1} \quad (209)$$

$$AUX_ENDO_LAG_96_13_t = AUX_ENDO_LAG_96_12_{t-1} \quad (210)$$

$$AUX_ENDO_LAG_27_14_t = AUX_ENDO_LAG_27_13_{t-1} \quad (211)$$

$$AUX_ENDO_LAG_96_14_t = AUX_ENDO_LAG_96_13_{t-1} \quad (212)$$

$$AUX_ENDO_LAG_27_15_t = AUX_ENDO_LAG_27_14_{t-1} \quad (213)$$

$$AUX_ENDO_LAG_96_15_t = AUX_ENDO_LAG_96_14_{t-1} \quad (214)$$

$$AUX_ENDO_LAG_27_16_t = AUX_ENDO_LAG_27_15_{t-1} \quad (215)$$

$$AUX_ENDO_LAG_96_16_t = AUX_ENDO_LAG_96_15_{t-1} \quad (216)$$

$$AUX_ENDO_LAG_27_17_t = AUX_ENDO_LAG_27_16_{t-1} \quad (217)$$

$$AUX_ENDO_LAG_96_17_t = AUX_ENDO_LAG_96_16_{t-1} \quad (218)$$

$$AUX_ENDO_LAG_27_18_t = AUX_ENDO_LAG_27_17_{t-1} \quad (219)$$

$$AUX_ENDO_LAG_96_18_t = AUX_ENDO_LAG_96_17_{t-1} \quad (220)$$

$$AUX_ENDO_LAG_27_19_t = AUX_ENDO_LAG_27_18_{t-1} \quad (221)$$

$$AUX_ENDO_LAG_96_19_t = AUX_ENDO_LAG_96_18_{t-1} \quad (222)$$

$$AUX_ENDO_LAG_27_20_t = AUX_ENDO_LAG_27_19_{t-1} \quad (223)$$

$$AUX_ENDO_LAG_96_20_t = AUX_ENDO_LAG_96_19_{t-1} \quad (224)$$

$$AUX_ENDO_LAG_27_21_t = AUX_ENDO_LAG_27_20_{t-1} \quad (225)$$

$$AUX_ENDO_LAG_96_21_t = AUX_ENDO_LAG_96_20_{t-1} \quad (226)$$

$$AUX_ENDO_LAG_27_22_t = AUX_ENDO_LAG_27_21_{t-1} \quad (227)$$

$$AUX_ENDO_LAG_96_22_t = AUX_ENDO_LAG_96_21_{t-1} \quad (228)$$

$$AUX_ENDO_LAG_27_23_t = AUX_ENDO_LAG_27_22_{t-1} \quad (229)$$

$$AUX_ENDO_LAG_96_23_t = AUX_ENDO_LAG_96_22_{t-1} \quad (230)$$

$$AUX_ENDO_LAG_27_24_t = AUX_ENDO_LAG_27_23_{t-1} \quad (231)$$

$$AUX_ENDO_LAG_96_24_t = AUX_ENDO_LAG_96_23_{t-1} \quad (232)$$

$$AUX_ENDO_LAG_27_25_t = AUX_ENDO_LAG_27_24_{t-1} \quad (233)$$

$$AUX_ENDO_LAG_96_25_t = AUX_ENDO_LAG_96_24_{t-1} \quad (234)$$

$$AUX_ENDO_LAG_27_26_t = AUX_ENDO_LAG_27_25_{t-1} \quad (235)$$

$$AUX_ENDO_LAG_96_26_t = AUX_ENDO_LAG_96_25_{t-1} \quad (236)$$

$$AUX_ENDO_LAG_27_27_t = AUX_ENDO_LAG_27_26_{t-1} \quad (237)$$

$$AUX_ENDO_LAG_96_27_t = AUX_ENDO_LAG_96_26_{t-1} \quad (238)$$

$$AUX_ENDO_LAG_27_28_t = AUX_ENDO_LAG_27_27_{t-1} \quad (239)$$

$$AUX_ENDO_LAG_96_28_t = AUX_ENDO_LAG_96_27_{t-1} \quad (240)$$

$$AUX_ENDO_LAG_27_29_t = AUX_ENDO_LAG_27_28_{t-1} \quad (241)$$

$$AUX_ENDO_LAG_96_29_t = AUX_ENDO_LAG_96_28_{t-1} \quad (242)$$

$$AUX_ENDO_LAG_27_30_t = AUX_ENDO_LAG_27_29_{t-1} \quad (243)$$

$$AUX_ENDO_LAG_96_30_t = AUX_ENDO_LAG_96_29_{t-1} \quad (244)$$

$$AUX_ENDO_LAG_27_31_t = AUX_ENDO_LAG_27_30_{t-1} \quad (245)$$

$$AUX_ENDO_LAG_96_31_t = AUX_ENDO_LAG_96_30_{t-1} \quad (246)$$

$$AUX_ENDO_LAG_27_32_t = AUX_ENDO_LAG_27_31_{t-1} \quad (247)$$

$$AUX_ENDO_LAG_96_32_t = AUX_ENDO_LAG_96_31_{t-1} \quad (248)$$

$$AUX_ENDO_LAG_27_33_t = AUX_ENDO_LAG_27_32_{t-1} \quad (249)$$

$$AUX_ENDO_LAG_96_33_t = AUX_ENDO_LAG_96_32_{t-1} \quad (250)$$

$$AUX_ENDO_LAG_27_34_t = AUX_ENDO_LAG_27_33_{t-1} \quad (251)$$

$$AUX_ENDO_LAG_96_34_t = AUX_ENDO_LAG_96_33_{t-1} \quad (252)$$

$$AUX_ENDO_LAG_27_35_t = AUX_ENDO_LAG_27_34_{t-1} \quad (253)$$

$$AUX_ENDO_LAG_96_35_t = AUX_ENDO_LAG_96_34_{t-1} \quad (254)$$

$$AUX_ENDO_LAG_27_36_t = AUX_ENDO_LAG_27_35_{t-1} \quad (255)$$

$$AUX_ENDO_LAG_96_36_t = AUX_ENDO_LAG_96_35_{t-1} \quad (256)$$

$$AUX_ENDO_LAG_27_37_t = AUX_ENDO_LAG_27_36_{t-1} \quad (257)$$

$$AUX_ENDO_LAG_96_37_t = AUX_ENDO_LAG_96_36_{t-1} \quad (258)$$

$$AUX_ENDO_LAG_27_38_t = AUX_ENDO_LAG_27_37_{t-1} \quad (259)$$

$$AUX_ENDO_LAG_96_38_t = AUX_ENDO_LAG_96_37_{t-1} \quad (260)$$

$$AUX_ENDO_LAG_135_1_t = shockn^*_{t-1} \quad (261)$$

$$AUX_ENDO_LAG_{135.2_t} = AUX_ENDO_LAG_{135.1_{t-1}} \quad (262)$$

$$AUX_ENDO_LAG_{135.3_t} = AUX_ENDO_LAG_{135.2_{t-1}} \quad (263)$$

$$AUX_ENDO_LAG_{135.4_t} = AUX_ENDO_LAG_{135.3_{t-1}} \quad (264)$$

$$AUX_ENDO_LAG_{135.5_t} = AUX_ENDO_LAG_{135.4_{t-1}} \quad (265)$$

$$AUX_ENDO_LAG_{135.6_t} = AUX_ENDO_LAG_{135.5_{t-1}} \quad (266)$$

$$AUX_ENDO_LAG_{135.7_t} = AUX_ENDO_LAG_{135.6_{t-1}} \quad (267)$$

$$AUX_ENDO_LAG_{135.8_t} = AUX_ENDO_LAG_{135.7_{t-1}} \quad (268)$$

$$AUX_ENDO_LAG_{135.9_t} = AUX_ENDO_LAG_{135.8_{t-1}} \quad (269)$$

$$AUX_ENDO_LAG_{135.10_t} = AUX_ENDO_LAG_{135.9_{t-1}} \quad (270)$$

$$AUX_ENDO_LAG_{135.11_t} = AUX_ENDO_LAG_{135.10_{t-1}} \quad (271)$$

$$AUX_ENDO_LAG_{135.12_t} = AUX_ENDO_LAG_{135.11_{t-1}} \quad (272)$$

$$AUX_ENDO_LAG_{135.13_t} = AUX_ENDO_LAG_{135.12_{t-1}} \quad (273)$$

$$AUX_ENDO_LAG_{135.14_t} = AUX_ENDO_LAG_{135.13_{t-1}} \quad (274)$$

$$AUX_ENDO_LAG_{135.15_t} = AUX_ENDO_LAG_{135.14_{t-1}} \quad (275)$$

$$AUX_ENDO_LAG_{135.16_t} = AUX_ENDO_LAG_{135.15_{t-1}} \quad (276)$$

$$AUX_ENDO_LAG_{135.17_t} = AUX_ENDO_LAG_{135.16_{t-1}} \quad (277)$$

$$AUX_ENDO_LAG_{135.18_t} = AUX_ENDO_LAG_{135.17_{t-1}} \quad (278)$$

$$AUX_ENDO_LAG_{135.19_t} = AUX_ENDO_LAG_{135.18_{t-1}} \quad (279)$$

$$AUX_ENDO_LAG_{135.20_t} = AUX_ENDO_LAG_{135.19_{t-1}} \quad (280)$$

$$AUX_ENDO_LAG_{135.21_t} = AUX_ENDO_LAG_{135.20_{t-1}} \quad (281)$$

$$AUX_ENDO_LAG_135_22_t = AUX_ENDO_LAG_135_21_{t-1} \quad (282)$$

$$AUX_ENDO_LAG_135_23_t = AUX_ENDO_LAG_135_22_{t-1} \quad (283)$$

$$AUX_ENDO_LAG_135_24_t = AUX_ENDO_LAG_135_23_{t-1} \quad (284)$$

$$AUX_ENDO_LAG_135_25_t = AUX_ENDO_LAG_135_24_{t-1} \quad (285)$$

$$AUX_ENDO_LAG_135_26_t = AUX_ENDO_LAG_135_25_{t-1} \quad (286)$$

$$AUX_ENDO_LAG_135_27_t = AUX_ENDO_LAG_135_26_{t-1} \quad (287)$$

$$AUX_ENDO_LAG_135_28_t = AUX_ENDO_LAG_135_27_{t-1} \quad (288)$$

$$AUX_ENDO_LAG_135_29_t = AUX_ENDO_LAG_135_28_{t-1} \quad (289)$$

$$AUX_ENDO_LAG_135_30_t = AUX_ENDO_LAG_135_29_{t-1} \quad (290)$$

$$AUX_ENDO_LAG_135_31_t = AUX_ENDO_LAG_135_30_{t-1} \quad (291)$$

$$AUX_ENDO_LAG_135_32_t = AUX_ENDO_LAG_135_31_{t-1} \quad (292)$$

$$AUX_ENDO_LAG_135_33_t = AUX_ENDO_LAG_135_32_{t-1} \quad (293)$$

$$AUX_ENDO_LAG_135_34_t = AUX_ENDO_LAG_135_33_{t-1} \quad (294)$$

$$AUX_ENDO_LAG_135_35_t = AUX_ENDO_LAG_135_34_{t-1} \quad (295)$$

$$AUX_ENDO_LAG_135_36_t = AUX_ENDO_LAG_135_35_{t-1} \quad (296)$$

$$AUX_ENDO_LAG_135_37_t = AUX_ENDO_LAG_135_36_{t-1} \quad (297)$$

$$AUX_ENDO_LAG_135_38_t = AUX_ENDO_LAG_135_37_{t-1} \quad (298)$$

$$AUX_EXO_LAG_140_0_t = delall_t \quad (299)$$

$$AUX_EXO_LAG_140_1_t = AUX_EXO_LAG_140_0_{t-1} \quad (300)$$

$$AUX_EXO_LAG_140_2_t = AUX_EXO_LAG_140_1_{t-1} \quad (301)$$

$$AUX_EXO_LAG_{140.3_t} = AUX_EXO_LAG_{140.2_{t-1}} \quad (302)$$

$$AUX_EXO_LAG_{140.4_t} = AUX_EXO_LAG_{140.3_{t-1}} \quad (303)$$

$$AUX_EXO_LAG_{140.5_t} = AUX_EXO_LAG_{140.4_{t-1}} \quad (304)$$

$$AUX_EXO_LAG_{140.6_t} = AUX_EXO_LAG_{140.5_{t-1}} \quad (305)$$

$$AUX_EXO_LAG_{140.7_t} = AUX_EXO_LAG_{140.6_{t-1}} \quad (306)$$

$$AUX_EXO_LAG_{140.8_t} = AUX_EXO_LAG_{140.7_{t-1}} \quad (307)$$

$$AUX_EXO_LAG_{140.9_t} = AUX_EXO_LAG_{140.8_{t-1}} \quad (308)$$

$$AUX_EXO_LAG_{140.10_t} = AUX_EXO_LAG_{140.9_{t-1}} \quad (309)$$

$$AUX_EXO_LAG_{140.11_t} = AUX_EXO_LAG_{140.10_{t-1}} \quad (310)$$

$$AUX_EXO_LAG_{140.12_t} = AUX_EXO_LAG_{140.11_{t-1}} \quad (311)$$

$$AUX_EXO_LAG_{140.13_t} = AUX_EXO_LAG_{140.12_{t-1}} \quad (312)$$

$$AUX_EXO_LAG_{140.14_t} = AUX_EXO_LAG_{140.13_{t-1}} \quad (313)$$

$$AUX_EXO_LAG_{140.15_t} = AUX_EXO_LAG_{140.14_{t-1}} \quad (314)$$

$$AUX_EXO_LAG_{140.16_t} = AUX_EXO_LAG_{140.15_{t-1}} \quad (315)$$

$$AUX_EXO_LAG_{140.17_t} = AUX_EXO_LAG_{140.16_{t-1}} \quad (316)$$

$$AUX_EXO_LAG_{140.18_t} = AUX_EXO_LAG_{140.17_{t-1}} \quad (317)$$

$$AUX_EXO_LAG_{140.19_t} = AUX_EXO_LAG_{140.18_{t-1}} \quad (318)$$

$$AUX_EXO_LAG_{140.20_t} = AUX_EXO_LAG_{140.19_{t-1}} \quad (319)$$

$$AUX_EXO_LAG_{140.21_t} = AUX_EXO_LAG_{140.20_{t-1}} \quad (320)$$

$$AUX_EXO_LAG_{140.22_t} = AUX_EXO_LAG_{140.21_{t-1}} \quad (321)$$

$$AUX_EXO_LAG_140_23_t = AUX_EXO_LAG_140_22_{t-1} \quad (322)$$

$$AUX_EXO_LAG_140_24_t = AUX_EXO_LAG_140_23_{t-1} \quad (323)$$

$$AUX_EXO_LAG_140_25_t = AUX_EXO_LAG_140_24_{t-1} \quad (324)$$

$$AUX_EXO_LAG_140_26_t = AUX_EXO_LAG_140_25_{t-1} \quad (325)$$

$$AUX_EXO_LAG_140_27_t = AUX_EXO_LAG_140_26_{t-1} \quad (326)$$

$$AUX_EXO_LAG_140_28_t = AUX_EXO_LAG_140_27_{t-1} \quad (327)$$

$$AUX_EXO_LAG_140_29_t = AUX_EXO_LAG_140_28_{t-1} \quad (328)$$

$$AUX_EXO_LAG_140_30_t = AUX_EXO_LAG_140_29_{t-1} \quad (329)$$

$$AUX_EXO_LAG_140_31_t = AUX_EXO_LAG_140_30_{t-1} \quad (330)$$

$$AUX_EXO_LAG_140_32_t = AUX_EXO_LAG_140_31_{t-1} \quad (331)$$

$$AUX_EXO_LAG_140_33_t = AUX_EXO_LAG_140_32_{t-1} \quad (332)$$

$$AUX_EXO_LAG_140_34_t = AUX_EXO_LAG_140_33_{t-1} \quad (333)$$

$$AUX_EXO_LAG_140_35_t = AUX_EXO_LAG_140_34_{t-1} \quad (334)$$

$$AUX_EXO_LAG_140_36_t = AUX_EXO_LAG_140_35_{t-1} \quad (335)$$

$$AUX_EXO_LAG_140_37_t = AUX_EXO_LAG_140_36_{t-1} \quad (336)$$

$$AUX_EXO_LAG_140_38_t = AUX_EXO_LAG_140_37_{t-1} \quad (337)$$