«**Material**»

Data and Analysis in Terms of Sustainable Growth in Corporate Accounts: As a Supplement to IAAER/CIERA, 1998

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The data and analyses are those used in the author's following presentation. "Accountants be Confident in/Responsible for the Initial Data: a True Base to Macro and Micro Sustainable Growth in the Endogenous Golden Age" at the Second Biennial International Accounting Research Conference, Du Paul University, Chicago, on the 2nd of October 1998. The methodology is explained in "Economic Accounting: A Macro and Micro Common Approach Using National and Corporate Accounts" [1998/May].

For the results of the analyses that use national accounts by country, see Material in the last "Papers of the Research Society of Commerce and Economics" 39(2). These two Materials by country and company develop compulsive financial policies based on "Economic Accounting."

(For notations, see 39(1))

Toyota versus GM:

Table 1 Coefficient of technological progress, m^*, as a function of relative share of profit and the capital-output ratio

Figure 1 Fundamental functions using parameters, π, Ω_p, n, and k

Figure 2 Actual, expected, and theoretical time series: Toyota and GM

Figure 3 Patterns of expected simulation compared with theoretical model: Toyota

A typical case of a Japanese company that has accumulated undistributed profit:

Table 1 Coefficient of technological progress, m^*, as a function of relative share of profit and the capital-output ratio

Case 1 By the increase in π

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	1.5	0.3	59.0241	0.4	0.12	0.06	0.0528	0.1728		0.136364	39.3494	0.2

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	k(t)	y(t)	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.136364	0.136364	0.106058	0.106058	0	1.5	0.777756	0.2	65.28406	43.52271	0.204545	0.518504	
2	0.136364	0.136364	0.106058	0.106058	0	1.5	0.777756	0.2	72.20793	48.13862	0.204545	0.518504	0
3	0.136364	0.136364	0.106058	0.106058	0	1.5	0.777756	0.2	79.86614	53.24409	0.204545	0.518504	0

Case 2 By the decrease in π

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	1.5	0.15	59.0241	0.4	0.06	0.03	0.0282	0.0882		0.06383	39.3494	0.1

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	k(t)	y(t)	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.06383	0.06383	0.035458	0.035458	0	1.5	0.555512	0.1	61.11699	40.74466	0.095745	0.370342	
2	0.06383	0.06383	0.035458	0.035458	0	1.5	0.555512	0.1	63.28409	42.18939	0.095745	0.370342	0
3	0.06383	0.06383	0.035458	0.035458	0	1.5	0.555512	0.1	65.52803	43.68536	0.095745	0.370342	0

Case 3 By the increase in Ω_P

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	3	0.2	59.0241	0.25	0.05	0.1	0.095	0.145		0.052632	19.6747	0.066667

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	k(t)	y(t)	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.052632	0.052632	0.024559	0.024559	0	3	0.466615	0.066667	60.47365	20.15788	0.157895	0.155538	
2	0.052632	0.052632	0.024559	0.024559	0	3	0.466615	0.066667	61.95881	20.65294	0.157895	0.155538	0
3	0.052632	0.052632	0.024559	0.024559	0	3	0.466615	0.066667	63.48043	21.16014	0.157895	0.155538	0

Case 4 By the decrease in Ω_P

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	1.5	0.2	59.0241	0.4	0.08	0.04	0.0368	0.1168		0.086957	39.3494	0.133333

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	k(t)	y(t)	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.086957	0.086957	0.057968	0.057968	-1.31E-17	1.5	0.666634	0.133333	62.44562	41.63041	0.130435	0.444423	
2	0.086957	0.086957	0.057968	0.057968	-1.31E-17	1.5	0.666634	0.133333	66.06548	44.04365	0.130435	0.444423	0
3	0.086957	0.086957	0.057968	0.057968	-1.31E-17	1.5	0.666634	0.133333	69.89518	46.59678	0.130435	0.444423	0

Note: $m^*=f(\pi, \Omega_P, n)$, but the above cases only use π and Ω_P.

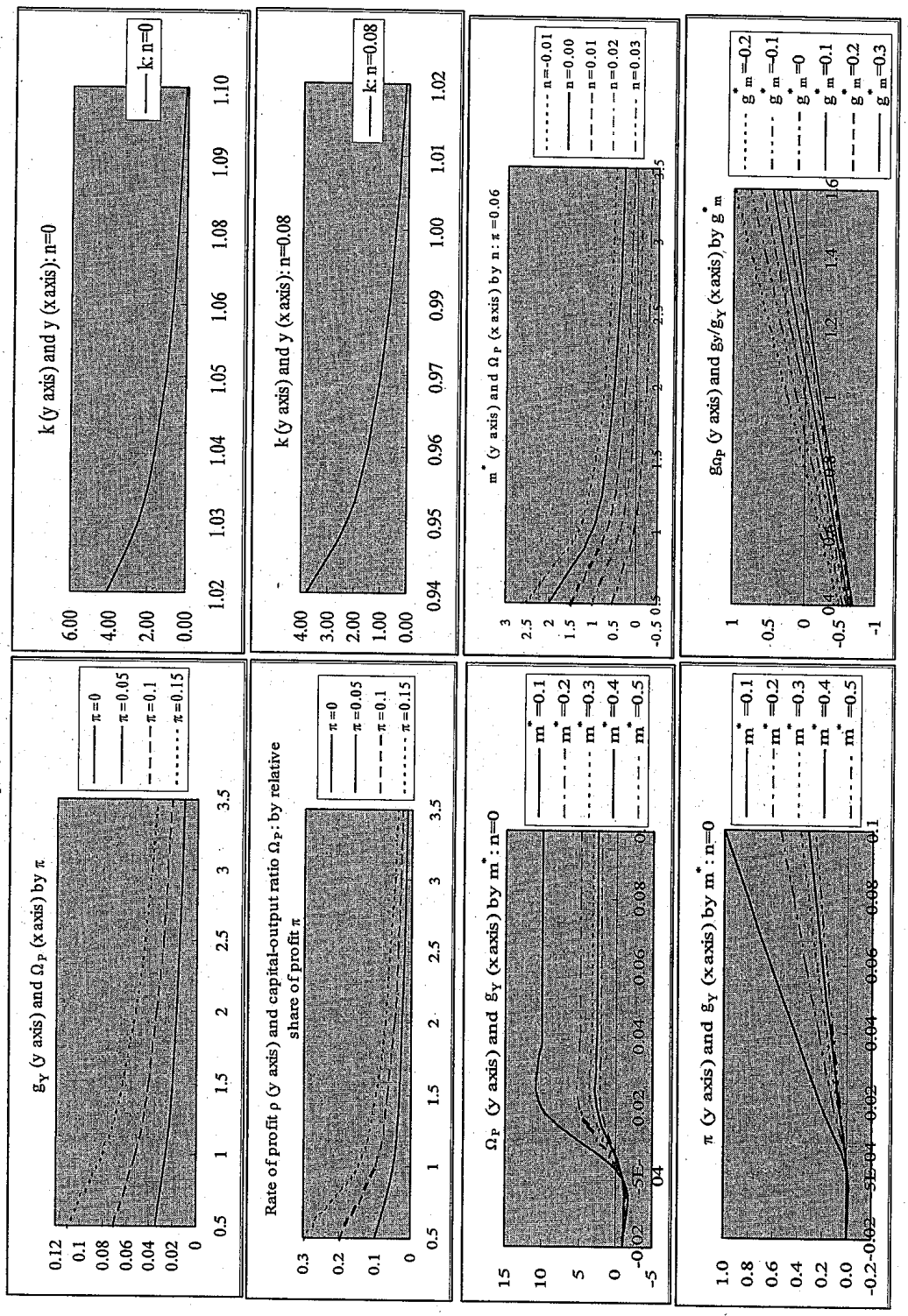

Figure 1 Fundamental functions using parameters, π, Ω_P, n, and k

T GM graphs for time series

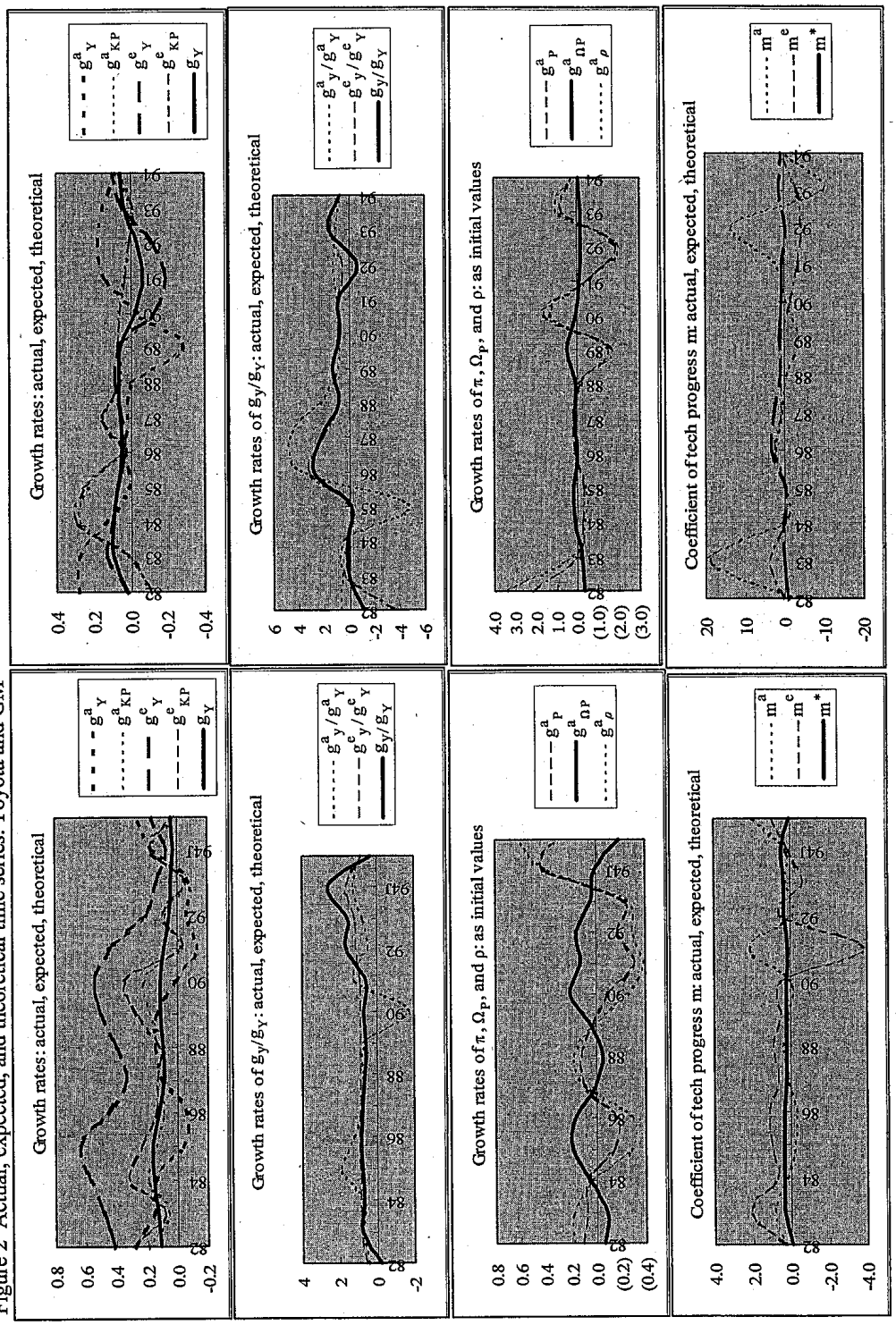

Figure 2 Actual, expected, and theoretical time series: Toyota and GM

Figure 3 Patterns of expected simulation compared with theoretical model: Toyota

Toyota (1)

Toyota 1996-97: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	5.3486	0.241	59.0241	0.157515	0.037961	0.165078	0.158811	0.196772		0.039459	11.03543	0.045059
period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.039459	0.039459	0.011737	0.011737	-6.86E-18	5.3486	0.297459	0.045059	59.71689	11.16496	0.211051	0.055614	
2	0.039459	0.039459	0.011737	0.011737	-6.86E-18	5.3486	0.297459	0.045059	60.41781	11.29601	0.211051	0.055614	0.0000
3	0.039459	0.039459	0.011737	0.011737	-6.86E-18	5.3486	0.297459	0.045059	61.12696	11.42859	0.211051	0.055614	0.0000

Toyota 1996-97: $g^e_Y>g^e_{KP}$ $g^a_Y=0.26478$ $g^a_{KP}= 0.021335$

Unbalanced growth	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0274	5.3486	0.241	59.0241	0.6079	0.146504	-0.03790	-0.032348	0.114156	0.0623		11.03543	0.045059
period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.171652	0.025007	-0.002329	0.140404	-0.125161	4.679166	0.817962	0.051505	58.88661	12.58485	0.133752	1.049741	
2	0.171652	0.028584	0.001153	0.140404	-0.122107	4.107806	0.817962	0.058669	58.9545	14.35182	0.133752	1.049741	2.12E-16
3	0.171652	0.03256	0.005023	0.140404	-0.118714	3.620153	0.817962	0.066572	59.25061	16.36688	0.133752	1.049741	-2.12E-16
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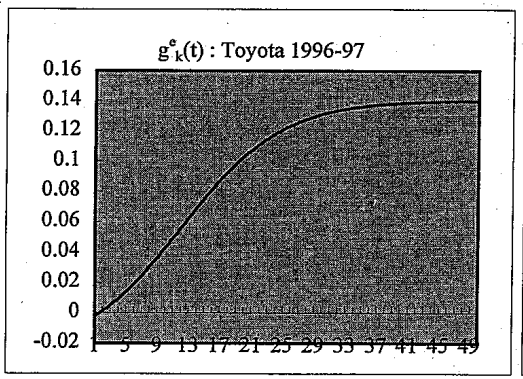
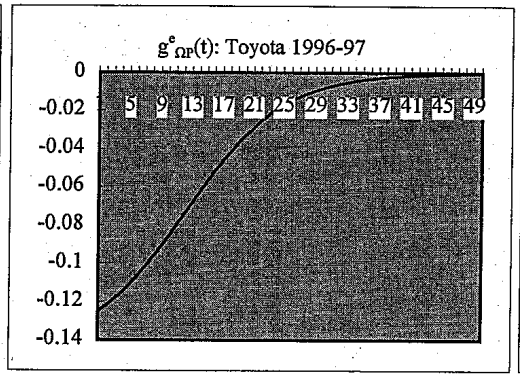
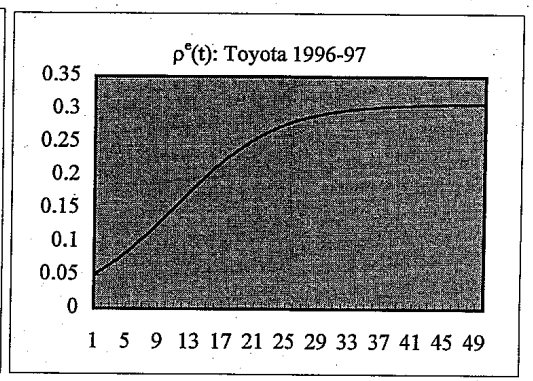
48	0.171652	0.171066	0.139834	0.140404	-0.0005	0.781482	0.817962	0.308389	4726.451	6048.063	0.133752	1.049741	-2.12E-16
49	0.171652	0.171151	0.139917	0.140404	-0.000427	0.781148	0.817962	0.30852	5387.764	6897.238	0.133752	1.049741	2.12E-16
50	0.171652	0.171224	0.139989	0.140404	-0.000365	0.780863	0.817962	0.308633	6141.989	7865.641	0.133752	1.049741	0







T GM graphs simulation

Toyota (2)

Toyota 1989-90: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0446	3.1445	0.4037	35.0695	0.241284	0.097406	0.208888	0.188541	0.285947		0.107918	11.15265	0.128383

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.107918	0.107918	0.060615	0.060615	1.31E-17	3.1445	0.561673	0.128383	37.19523	11.82866	0.339348	0.178621	
2	0.107918	0.107918	0.060615	0.060615	1.31E-17	3.1445	0.561673	0.128383	39.4498	12.54565	0.339348	0.178621	0
3	0.107918	0.107918	0.060615	0.060615	1.31E-17	3.1445	0.561673	0.128383	41.84104	13.3061	0.339348	0.178621	0

Toyota 1989-90: $g^e_Y>g^e_{KP}$ $g^a_Y=0.13304$ $g^a_{KP}=0.17621$

Unbalanced growth	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0446	3.1445	0.4037	35.0695	0.827	0.33386	0.3306	0.220226	0.554086	0.1004		11.15265	0.128383

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.501186	0.264521	0.210531	0.437091	-0.157652	2.648763	0.872115	0.152411	42.45272	16.02737	0.831786	0.525486	
2	0.501186	0.314028	0.257925	0.437091	-0.124673	2.318533	0.872115	0.174119	53.40232	23.0328	0.831786	0.525486	0
3	0.501186	0.358755	0.300742	0.437091	-0.094879	2.098554	0.872115	0.192371	69.46264	33.10024	0.831786	0.525486	0
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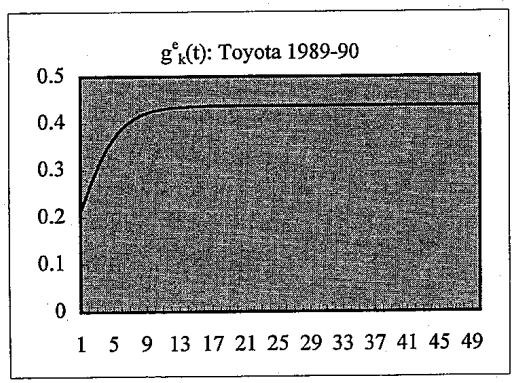
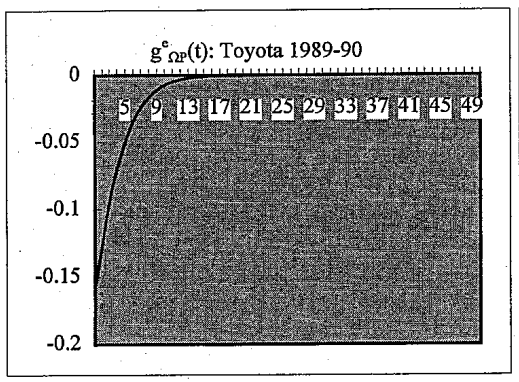
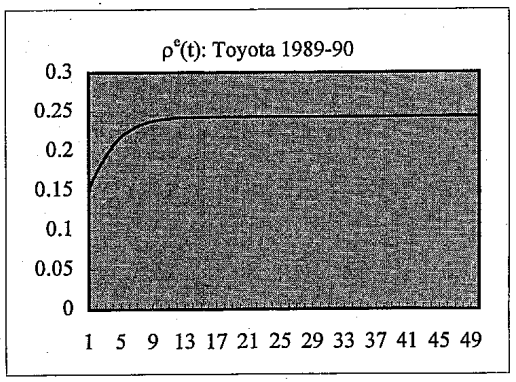
48	0.501186	0.501186	0.437091	0.437091	-1.52E-09	1.659636	0.872115	0.145213	6.71E+08	4.04E+08	0.831786	0.525486	0
49	0.501186	0.501186	0.437091	0.437091	-1.01E-09	1.659636	0.872115	0.145213	9.64E+08	5.81E+08	0.831786	0.525486	0
50	0.501186	0.501186	0.437091	0.437091	-6.76E-10	1.659636	0.872115	0.145213	1.39E+09	8.35E+08	0.831786	0.525486	2.11E-16







T GM graphs simulation

Toyota (3)

Toyota 1982-83: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.1335	2.6579	0.3595	20.4634	0.273381	0.09828	0.162939	0.146925	0.245206		0.108992	7.699086	0.135257
period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.108992	0.108992	-0.021621	-0.021621	0	2.6579	-0.198375	0.135257	20.02095	7.532621	0.28969	-0.074636	
2	0.108992	0.108992	-0.021621	-0.021621	0	2.6579	-0.198375	0.135257	19.58807	7.369756	0.28969	-0.074636	0
3	0.108992	0.108992	-0.021621	-0.021621	0	2.6579	-0.198375	0.135257	19.16456	7.210412	0.28969	-0.074636	0

Toyota 1982-83: $g^e_Y>g^e_{KP}$ $g^a_Y=0.039317$ $g^a_{KP}=0.042207$

Unbalanced growth	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.1335	2.6579	0.3595	20.4634	0.8096	0.291051	0.3338	0.236647	0.527698	0.1502		7.699086	0.135257
period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.410539	0.280048	0.129288	0.24441	-0.092512	2.412013	0.59534	0.149046	23.10907	9.580822	0.744339	0.328359	
2	0.410539	0.308597	0.154474	0.24441	-0.072272	2.237692	0.59534	0.160657	26.67883	11.92247	0.744339	0.328359	1.69E-16
3	0.410539	0.332637	0.175683	0.24441	-0.055229	2.114108	0.59534	0.170048	31.36585	14.83645	0.744339	0.328359	-1.69E-16
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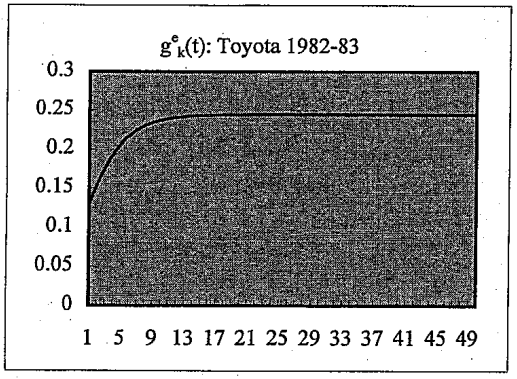
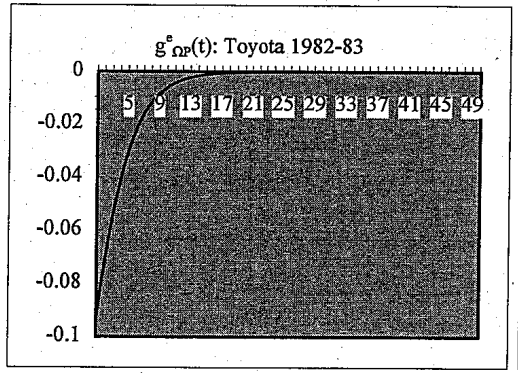
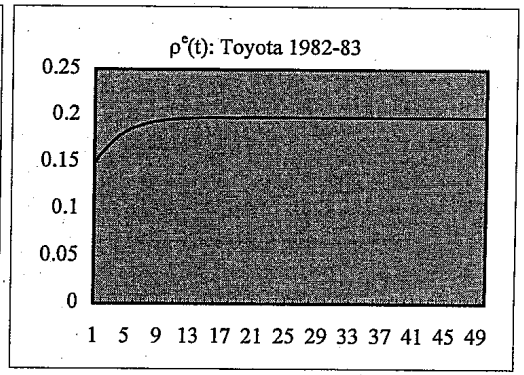
48	0.410539	0.410539	0.24441	0.24441	-1.29E-08	1.813077	0.59534	0.198282	504787.3	278414.7	0.744339	0.328359	0
49	0.410539	0.410539	0.24441	0.24441	-9.16E-09	1.813077	0.59534	0.198282	628162.6	346462.1	0.744339	0.328359	0
50	0.410539	0.410539	0.24441	0.24441	-6.49E-09	1.813077	0.59534	0.198282	781692	431141	0.744339	0.328359	0







T GM graphs simulation

Figure 4 Patterns of expected simulation compared with theoretical model: GM GM (1)

GM 1994-95: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0172	1.1582	0.1216	66.9934	0.463349	0.056343	0.008914	0.008411	0.064755		0.059707	57.84269	0.104991
period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.059707	0.059707	0.041789	0.041789	-6.66E-18	1.1582	0.69989	0.104991	69.79296	60.25985	0.069153	0.604291	
2	0.059707	0.059707	0.041789	0.041789	-6.66E-18	1.1582	0.69989	0.104991	72.70951	62.77803	0.069153	0.604291	0.0000
3	0.059707	0.059707	0.041789	0.041789	-6.66E-18	1.1582	0.69989	0.104991	75.74794	65.40143	0.069153	0.604291	0.0000

GM 1994-95: $g^e_Y>g^e_{KP}$ $g^a_Y=0.076017$ $g^a_{KP}= 0.063055$

Unbalanced growth	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0172	1.1582	0.1216	66.9934	0.7731	0.094009	-0.02310	-0.020928	0.073081	0.2147		57.84269	0.104991
period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.103764	0.069646	0.051559	0.0851	-0.030911	1.122399	0.820132	0.108339	70.44751	62.7651	0.080664	1.054997	
2	0.103764	0.071867	0.053743	0.0851	-0.028898	1.089964	0.820132	0.111563	74.23355	68.1064	0.080664	1.054997	2.1E-16
3	0.103764	0.074006	0.055845	0.0851	-0.02696	1.060579	0.820132	0.114654	78.37914	73.90226	0.080664	1.054997	0
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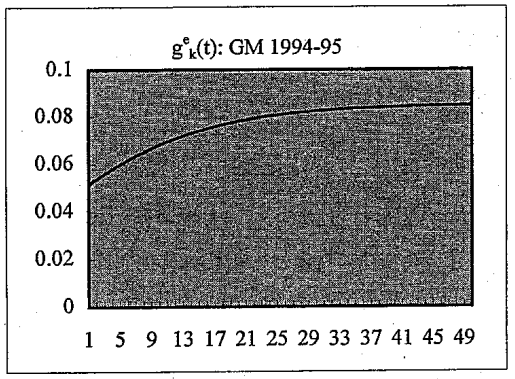
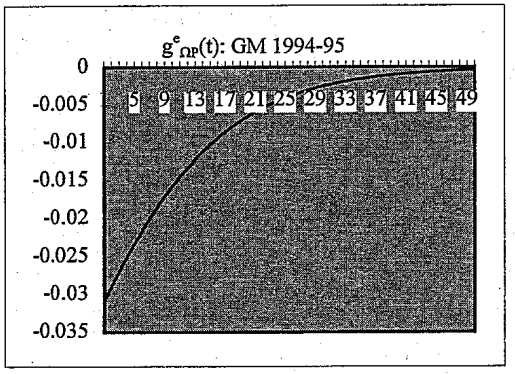
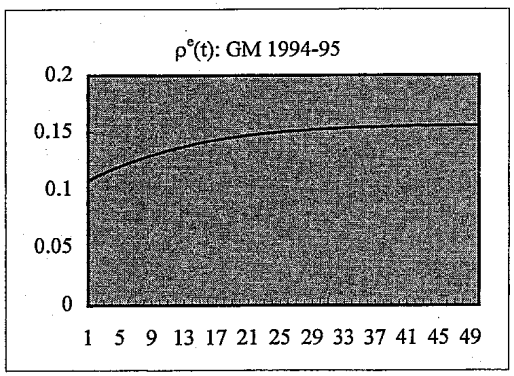
48	0.103764	0.103275	0.08462	0.0851	-0.000443	0.78071	0.820132	0.155756	2276.598	2916.059	0.080664	1.054997	2.1E-16
49	0.103764	0.103321	0.084665	0.0851	-0.000401	0.780397	0.820132	0.155818	2469.345	3164.215	0.080664	1.054997	-2.1E-16
50	0.103764	0.103362	0.084705	0.0851	-0.000364	0.780113	0.820132	0.155875	2678.512	3433.49	0.080664	1.054997	2.1E-16







T GM graphs simulation

GM (2)

GM 1989-90: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	-0.0177	1.0238	0.1105	50.4786	0.49412	0.0546	0.001299	0.001229	0.055829		0.057754	49.30514	0.107931

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.057754	0.057754	0.076813	0.076813	0	1.0238	1.330016	0.107931	54.35602	53.09242	0.059128	1.299097	
2	0.057754	0.057754	0.076813	0.076813	0	1.0238	1.330016	0.107931	58.53128	57.17062	0.059128	1.299097	0
3	0.057754	0.057754	0.076813	0.076813	0	1.0238	1.330016	0.107931	63.02726	61.56208	0.059128	1.299097	0

GM 1989-90: $g^e_Y<g^e_{KP}$ $g^a_Y=-0.28931$ $g^a_{KP}=0.074145$

Unbalanced growth	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	-0.0177	1.0238	0.1105	50.4786	0.535	0.059118	0.0178	0.016748	0.075865	0.1832		49.30514	0.107931

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.062832	0.078758	0.098196	0.081983	0.014984	1.039141	1.304799	0.106338	55.43538	53.34732	0.080632	1.016756	
2	0.062832	0.077595	0.097012	0.081983	0.01389	1.053575	1.304799	0.104881	60.81327	57.7209	0.080632	1.016756	0
3	0.062832	0.076532	0.09593	0.081983	0.01289	1.067155	1.304799	0.103546	66.64707	62.45304	0.080632	1.016756	-2.18E-16
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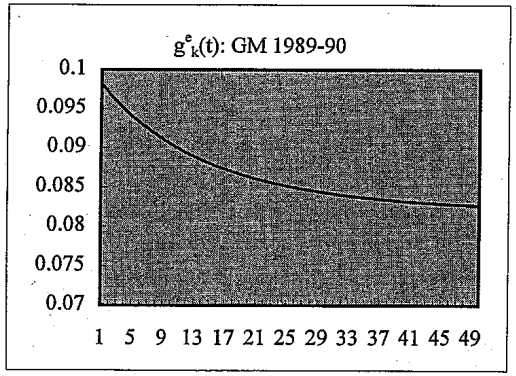
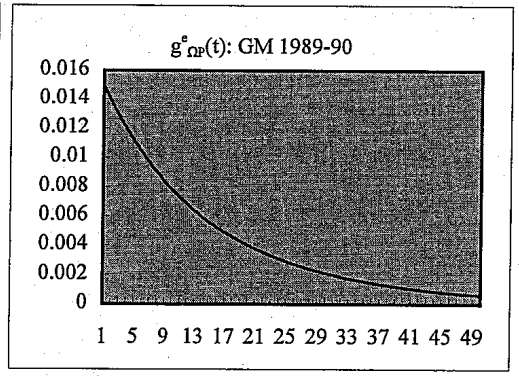
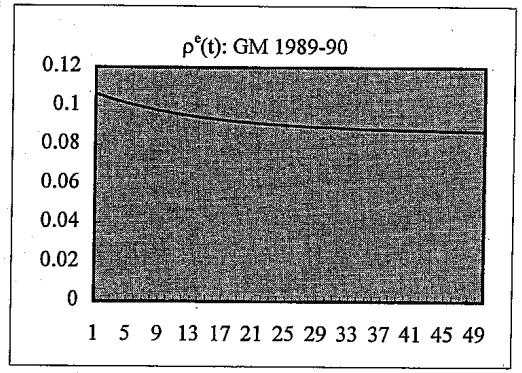
48	0.062832	0.063565	0.082729	0.081983	0.00069	1.269369	1.304799	0.087051	2748.289	2165.083	0.080632	1.016756	0
49	0.062832	0.063521	0.082685	0.081983	0.000649	1.270192	1.304799	0.086995	2975.531	2342.583	0.080632	1.016756	0
50	0.062832	0.06348	0.082643	0.081983	0.00061	1.270967	1.304799	0.086942	3221.438	2534.635	0.080632	1.016756	2.18E-16







T GM graphs simulation

GM (3)

GM 1982-83: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0518	1.1005	0.0492	32.7823	0.476077	0.023423	0.002354	0.002299	0.025722		0.023985	29.78855	0.044707

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.023985	0.023985	-0.026445	-0.026445	-3.56E-18	1.1005	-1.102588	0.044707	31.91536	29.00078	0.026395	-1.001897	
2	0.023985	0.023985	-0.026445	-0.026445	-3.56E-18	1.1005	-1.102588	0.044707	31.07135	28.23385	0.026395	-1.001897	0
3	0.023985	0.023985	-0.026445	-0.026445	-3.56E-18	1.1005	-1.102588	0.044707	30.24966	27.48719	0.026395	-1.001897	0

GM 1982-83: $g^e_Y>g^e_{KP}$ $g^a_Y=0.039317$ $g^a_{KP}=0.042207$

Unbalanced growth	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0518	1.1005	0.0492	32.7823	0.2207	0.010858	-0.1336	-0.132149	-0.121291	0.2113		29.78855	0.044707

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.010978	-0.111424	-0.155186	-0.038812	-0.121073	0.967259	-3.535542	0.050865	27.69496	28.6324	-0.122622	0.316516	
2	0.010978	-0.126773	-0.169778	-0.038812	-0.136255	0.835466	-3.535542	0.058889	22.99295	27.52112	-0.122622	0.316516	0
3	0.010978	-0.146771	-0.188792	-0.038812	-0.156036	0.705103	-3.535542	0.069777	18.65207	26.45298	-0.122622	0.316516	0
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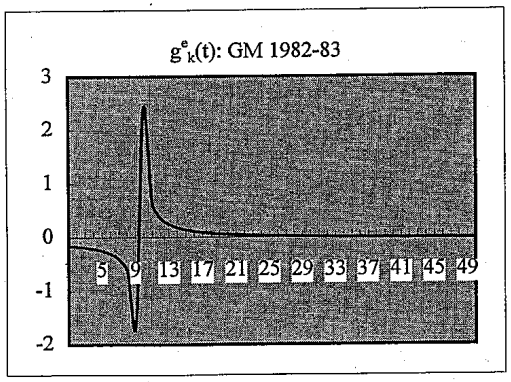
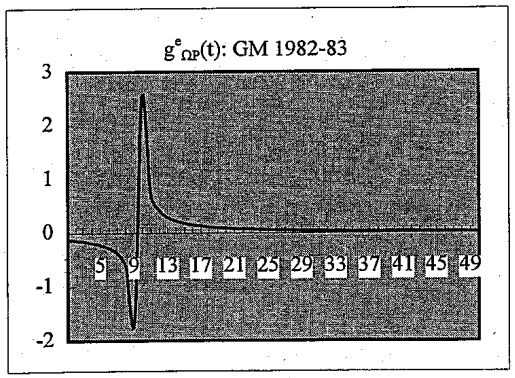
48	0.010978	0.03206	-0.018768	-0.038812	0.020853	-3.90454	-3.535542	-0.012601	-17.39489	4.455042	-0.122622	0.316516	1.75E-16
49	0.010978	0.031405	-0.01939	-0.038812	0.020206	-3.983433	-3.535542	-0.012351	-17.05759	4.282133	-0.122622	0.316516	0
50	0.010978	0.030783	-0.019982	-0.038812	0.01959	-4.06147	-3.535542	-0.012114	-16.71675	4.115936	-0.122622	0.316516	0





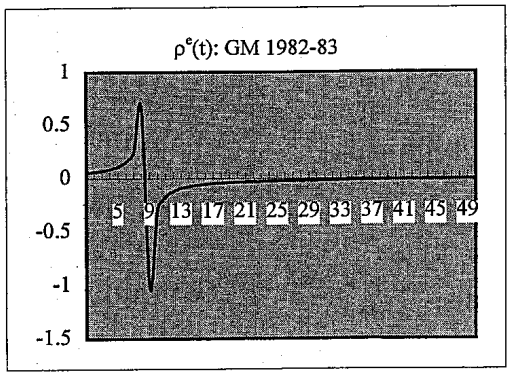


Table 2 Alternative policies in a short run and a long run: Toyota

Toyota (1)

Balanced Growth State Toyota 1996-97: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	5.3486	0.241	59.0241	0.157515	0.037961	0.165078	0.158811	0.196772		0.039459	11.03543	0.045059

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.039459	0.039459	0.011737	0.011737	-6.86E-18	5.3486	0.297459	0.045059	59.71689	11.16496	0.211051	0.055614	
2	0.039459	0.039459	0.011737	0.011737	-6.86E-18	5.3486	0.297459	0.045059	60.41781	11.29601	0.211051	0.055614	0
3	0.039459	0.039459	0.011737	0.011737	-6.86E-18	5.3486	0.297459	0.045059	61.12696	11.42859	0.211051	0.055614	0

Unbalanced Growth State Toyota 1996-97: $g^e_Y>g^e_{KP}$ $g^a_Y=0.26478$ $g^a_{KP}= 0.021335$

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0274	5.3486	0.241	59.0241	0.6079	0.146504	-0.03790	-0.032348	0.114156	0.0623		11.03543	0.045059

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.171652	0.025007	-0.002329	0.140404	-0.125161	4.679166	0.817962	0.051505	58.88661	12.58485	0.133752	1.049741	
2	0.171652	0.028584	0.001153	0.140404	-0.122107	4.107806	0.817962	0.058669	58.9545	14.35182	0.133752	1.049741	2.12E-16
3	0.171652	0.03256	0.005023	0.140404	-0.118714	3.620153	0.817962	0.066572	59.25061	16.36688	0.133752	1.049741	-2.12E-16

ALTERNATIVE POLICIES in the short run: by changing $s^e_{SP/P}$ or $s^e_{SWD/WD}$

1-1. By changing $s^e_{SP/P}$

Toyota 1996-97: $g^e_Y>g^e_{KP}$ $g^a_Y=0.26478$ $g^a_{KP}= 0.021335$

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0274	5.3486	0.241	59.0241	0.4	0.0964	-0.03790	-0.034246	0.062154	0.0623		11.03543	0.045059

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.106684	0.01286	-0.014152	0.07717	-0.084779	4.895149	0.723348	0.049232	58.18879	11.88703	0.068784	1.121911	
2	0.106684	0.014052	-0.012992	0.07717	-0.083703	4.48541	0.723348	0.05373	57.43278	12.80435	0.068784	1.121911	1.98E-16
3	0.106684	0.015335	-0.011743	0.07717	-0.082543	4.11517	0.723348	0.058564	56.75834	13.79247	0.068784	1.121911	-1.98E-16

2-1. By changing $s^e_{SWD/WD}$

Toyota 1996-97: $g^e_Y>g^e_{KP}$ $g^a_Y=0.26478$ $g^a_{KP}= 0.021335$

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0274	5.3486	0.241	59.0241	0.6079	0.146504	0.02000	0.01707	0.163574	0.0623		11.03543	0.045059

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.171652	0.035832	0.008207	0.140404	-0.115921	4.728583	0.817962	0.050967	59.50852	12.58485	0.191652	0.732603	
2	0.171652	0.04053	0.01278	0.140404	-0.111911	4.199401	0.817962	0.057389	60.26906	14.35182	0.191652	0.732603	0
3	0.171652	0.045638	0.017751	0.140404	-0.107552	3.747746	0.817962	0.064305	61.33892	16.36688	0.191652	0.732603	0

Toyota (2)

3-1. By changing both $s^e_{SP/P}$ and $s^e_{SWD/WD}$

Toyota 1996-97: $g^e_Y > g^e_{KP}$ g^a_Y=0.26478 g^a_{KP}= 0.021335

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
		0.0274	5.3486	0.241	59.0241	0.4	0.0964	0.02000	0.018072	0.114472	0.0623		11.03543	0.045059

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.106684	0.023686	-0.003615	0.07717	-0.074998	4.947467	0.723348	0.048712	58.8107	11.88703	0.126684	0.609151	
2	0.106684	0.025606	-0.001746	0.07717	-0.073263	4.585003	0.723348	0.052563	58.70801	12.80435	0.126684	0.609151	3.65E-16
3	0.106684	0.02763	0.000224	0.07717	-0.071433	4.257481	0.723348	0.056606	58.72116	13.79247	0.126684	0.609151	0

1-2. By changing $s^e_{SP/P}$

Toyota 1996-97: $g^e_Y > g^e_{KP}$ g^a_Y=0.26478 g^a_{KP}= 0.021335

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
		0.0274	5.3486	0.241	59.0241	0.8	0.1928	-0.03790	-0.030593	0.162207	0.0623		11.03543	0.045059

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.23885	0.037571	0.009899	0.205811	-0.162473	4.479597	0.861674	0.053799	59.6084	13.30664	0.20095	1.024189	
2	0.23885	0.044859	0.016993	0.205811	-0.15659	3.778138	0.861674	0.063788	60.62135	16.0453	0.20095	1.024189	2.17E-16
3	0.23885	0.053188	0.0251	0.205811	-0.149867	3.21192	0.861674	0.075033	62.14294	19.3476	0.20095	1.024189	0

2-2. By changing $s^e_{SWD/WD}$

Toyota 1996-97: $g^e_Y > g^e_{KP}$ g^a_Y=0.26478 g^a_{KP}= 0.021335

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
		0.0274	5.3486	0.241	59.0241	0.6079	0.146504	0.10000	0.08535	0.231854	0.0623		11.03543	0.045059

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.171652	0.050789	0.022766	0.140404	-0.103155	4.796863	0.817962	0.050241	60.36781	12.58485	0.271652	0.516855	
2	0.171652	0.056631	0.028452	0.140404	-0.098169	4.325957	0.817962	0.05571	62.08537	14.35182	0.271652	0.516855	0
3	0.171652	0.062796	0.034452	0.140404	-0.092908	3.924041	0.817962	0.061416	64.22432	16.36688	0.271652	0.516855	2.15E-16

3-2. By changing both $s^e_{SP/P}$ and $s^e_{SWD/WD}$

Toyota 1996-97: $g^e_Y > g^e_{KP}$ g^a_Y=0.26478 g^a_{KP}= 0.021335

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
		0.0274	5.3486	0.241	59.0241	0.8	0.1928	0.10000	0.08072	0.27352	0.0623		11.03543	0.045059

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.23885	0.063353	0.034994	0.205811	-0.141661	4.59091	0.861674	0.052495	61.0896	13.30664	0.33885	0.607381	
2	0.23885	0.073809	0.045171	0.205811	-0.133221	3.979302	0.861674	0.060563	63.8491	16.0453	0.33885	0.607381	0
3	0.23885	0.085153	0.056213	0.205811	-0.124064	3.485613	0.861674	0.069141	67.43825	19.3476	0.33885	0.607381	1.83E-16

Toyota (3)

ALTERNATIVE POLICIES in the long run: by changing each parameter: π, Ω_P, and n

Balanced Growth State Toyota 1996-97: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$ g^a_Y=0.26478 g^a_{KP}= 0.021335

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	5.3486	0.241	59.0241	0.157515	0.037961	0.165078	0.158811	0.196772		0.039459	11.03543	0.045059

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.039459	0.039459	0.011737	0.011737	-6.86E-18	5.3486	0.297459	0.045059	59.71689	11.16496	0.211051	0.055614	
2	0.039459	0.039459	0.011737	0.011737	-6.86E-18	5.3486	0.297459	0.045059	60.41781	11.29601	0.211051	0.055614	0
3	0.039459	0.039459	0.011737	0.011737	-6.86E-18	5.3486	0.297459	0.045059	61.12696	11.42859	0.211051	0.055614	0

4-1. By changing π: by using tax rate and adjusting wage level and others

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	5.3486	0.3	59.0241	0.157515	0.047255	0.205491	0.195781	0.243035		0.049598	11.03543	0.056089

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.049598	0.049598	0.021606	0.021606	0	5.3486	0.435625	0.056089	60.29939	11.27386	0.265281	0.081447	
2	0.049598	0.049598	0.021606	0.021606	0	5.3486	0.435625	0.056089	61.60223	11.51745	0.265281	0.081447	0
3	0.049598	0.049598	0.021606	0.021606	0	5.3486	0.435625	0.056089	62.93323	11.7663	0.265281	0.081447	0

4-2. By changing π: by using tax rate and adjusting wage level and others

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	5.3486	0.2	59.0241	0.157515	0.031503	0.136994	0.132678	0.164181		0.032528	11.03543	0.037393

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.032528	0.032528	0.004991	0.004991	-6.04E-18	5.3486	0.153438	0.037393	59.31869	11.09051	0.173978	0.028687	
2	0.032528	0.032528	0.004991	0.004991	-6.04E-18	5.3486	0.153438	0.037393	59.61475	11.14586	0.173978	0.028687	0
3	0.032528	0.032528	0.004991	0.004991	-6.04E-18	5.3486	0.153438	0.037393	59.91228	11.20149	0.173978	0.028687	0

5-1. By changing Ω_P: using tax rate and depreciation ratio and others

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	4	0.241	59.0241	0.2	0.0482	0.1446	0.13763	0.18583		0.050641	14.75603	0.06025

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.050641	0.050641	0.022621	0.022621	-6.79E-18	4	0.446696	0.06025	60.35929	15.08982	0.202564	0.111674	
2	0.050641	0.050641	0.022621	0.022621	-6.79E-18	4	0.446696	0.06025	61.72468	15.43117	0.202564	0.111674	0
3	0.050641	0.050641	0.022621	0.022621	-6.79E-18	4	0.446696	0.06025	63.12096	15.78024	0.202564	0.111674	0

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Toyota alternative policies

Toyota (4)

5-2. By changing Ω_P: using tax rate and depreciation ratio and others

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0274	6	0.241	59.0241	0.142857	0.034429	0.172143	0.166216	0.200645		0.035656	9.83735	0.040167

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.035656	0.035656	0.008036	0.008036	-6.88E-18	6	0.225374	0.040167	59.49842	9.916403	0.213937	0.037562	
2	0.035656	0.035656	0.008036	0.008036	-6.88E-18	6	0.225374	0.040167	59.97654	9.996091	0.213937	0.037562	0
3	0.035656	0.035656	0.008036	0.008036	-6.88E-18	6	0.225374	0.040167	60.45851	10.07642	0.213937	0.037562	0

6-1. By changing n as the growth rate of workers

parameters	**n**	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.05	5.3486	0.241	59.0241	0.157515	0.037961	0.165078	0.158811	0.196772		0.039459	11.03543	0.045059

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.039459	0.039459	-0.010039	-0.010039	-7.01E-18	5.3486	-0.254416	0.045059	58.43156	10.92464	0.211051	-0.047567	
2	0.039459	0.039459	-0.010039	-0.010039	-7.01E-18	5.3486	-0.254416	0.045059	57.84496	10.81497	0.211051	-0.047567	0
3	0.039459	0.039459	-0.010039	-0.010039	-7.01E-18	5.3486	-0.254416	0.045059	57.26425	10.7064	0.211051	-0.047567	0

6-2. By changing n as the growth rate of workers

parameters	**n**	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	-0.01	5.3486	0.241	59.0241	0.157515	0.037961	0.165078	0.158811	0.196772		0.039459	11.03543	0.045059

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.039459	0.039459	0.049959	0.049959	-6.61E-18	5.3486	1.266088	0.045059	61.97286	11.58674	0.211051	0.236714	
2	0.039459	0.039459	0.049959	0.049959	-6.61E-18	5.3486	1.266088	0.045059	65.06894	12.1656	0.211051	0.236714	0
3	0.039459	0.039459	0.049959	0.049959	-6.61E-18	5.3486	1.266088	0.045059	68.3197	12.77338	0.211051	0.236714	0

6-3. By changing n and Ω_P

parameters	**n**	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0	4	0.241	59.0241	0.2	0.0482	0.1446	0.13763	0.18583		0.050641	14.75603	0.06025

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.050641	0.050641	0.050641	0.050641	-6.6E-18	4	1	0.06025	62.01313	15.50328	0.202564	0.25	
2	0.050641	0.050641	0.050641	0.050641	-6.6E-18	4	1	0.06025	65.15353	16.28838	0.202564	0.25	0
3	0.050641	0.050641	0.050641	0.050641	-6.6E-18	4	1	0.06025	68.45297	17.11324	0.202564	0.25	0

Table 3 Alternative policies in a short run and a long run: GM (1)

Balanced Growth State GM 1994-95: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0172	1.1582	0.1216	66.9934	0.463349	0.056343	0.008914	0.008411	0.064755		0.059707	57.84269	0.104991

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.059707	0.059707	0.041789	0.041789	-6.66E-18	1.1582	0.69989	0.104991	69.79296	60.25985	0.069153	0.604291	
2	0.059707	0.059707	0.041789	0.041789	-6.66E-18	1.1582	0.69989	0.104991	72.70951	62.77803	0.069153	0.604291	0
3	0.059707	0.059707	0.041789	0.041789	-6.66E-18	1.1582	0.69989	0.104991	75.74794	65.40143	0.069153	0.604291	0

Unbalanced Growth State GM 1994-95: $g^e_Y>g^e_{KP}$ $g^a_Y=0.076017$ $g^a_{KP}= 0.063055$

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0172	1.1582	0.1216	66.9934	0.7731	0.094009	-0.02310	-0.020928	0.073081	0.2147		57.84269	0.104991

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.103764	0.069646	0.051559	0.0851	-0.030911	1.122399	0.820132	0.108339	70.44751	62.7651	0.080664	1.054997	
2	0.103764	0.071867	0.053743	0.0851	-0.028898	1.089964	0.820132	0.111563	74.23355	68.1064	0.080664	1.054997	2.1E-16
3	0.103764	0.074006	0.055845	0.0851	-0.02696	1.060579	0.820132	0.114654	78.37914	73.90226	0.080664	1.054997	0

ALTERNATIVE POLICIES in the short-run : by changing $s^e_{SP/P}$ or $s^e_{SWD/WD}$

1-1. By changing $s^e_{SP/P}$

GM 1994-95: $g^e_Y>g^e_{KP}$ $g^a_Y=0.076017$ $g^a_{KP}= 0.063055$

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0172	1.1582	0.1216	66.9934	0.4	0.04864	-0.02310	-0.021976	0.026664	0.0623		57.84269	0.104991

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.051127	0.024199	0.00688	0.033353	-0.025618	1.128529	0.652361	0.107751	67.45433	59.77192	0.028027	1.190044	
2	0.051127	0.024835	0.007506	0.033353	-0.025013	1.100301	0.652361	0.110515	67.96062	61.7655	0.028027	1.190044	0
3	0.051127	0.025472	0.008132	0.033353	-0.024407	1.073446	0.652361	0.11328	68.51329	63.82558	0.028027	1.190044	0

2-1. By changing $s^e_{SWD/WD}$

GM 1994-95: $g^e_Y>g^e_{KP}$ $g^a_Y=0.076017$ $g^a_{KP}= 0.063055$

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0172	1.1582	0.1216	66.9934	0.7731	0.094009	0.02000	0.01812	0.112129	0.0623		57.84269	0.104991

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.103764	0.106859	0.088143	0.0851	0.002804	1.161448	0.820132	0.104697	72.89837	62.7651	0.123764	0.6876	
2	0.103764	0.10656	0.087849	0.0851	0.002533	1.16439	0.820132	0.104432	79.30241	68.1064	0.123764	0.6876	0
3	0.103764	0.106291	0.087584	0.0851	0.002289	1.167056	0.820132	0.104194	86.24804	73.90226	0.123764	0.6876	0

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GM (2)

3-1. By changing both $s^e_{SP/P}$ and $s^e_{SWD/WD}$

GM 1994-95: $g^e_Y > g^e_{KP}$ g^a_Y=0.076017 g^a_{KP}= 0.063055

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
		0.0172	1.1582	0.1216	66.9934	0.4	0.04864	0.02000	0.019027	0.067667	0.0623		57.84269	0.104991

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.051127	0.061412	0.043464	0.033353	0.009784	1.169532	0.652361	0.103973	69.9052	59.77192	0.071127	0.468925	
2	0.051127	0.060816	0.042879	0.033353	0.009218	1.180313	0.652361	0.103023	72.90266	61.7655	0.071127	0.468925	0
3	0.051127	0.060261	0.042333	0.033353	0.00869	1.19057	0.652361	0.102136	75.98883	63.82558	0.071127	0.468925	0

1-2. By changing $s^e_{SP/P}$

GM 1994-95: $g^e_Y > g^e_{KP}$ g^a_Y=0.076017 g^a_{KP}= 0.063055

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
		0.0172	1.1582	0.1216	66.9934	0.9	0.10944	-0.02310	-0.020572	0.088868	0.0623		57.84269	0.104991

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.122889	0.086159	0.067793	0.103902	-0.032711	1.120315	0.845494	0.108541	71.53506	63.85265	0.099789	1.041216	
2	0.122889	0.089072	0.070657	0.103902	-0.030116	1.086575	0.845494	0.111911	76.58951	70.48706	0.099789	1.041216	0
3	0.122889	0.091838	0.073376	0.103902	-0.027653	1.056529	0.845494	0.115094	82.20934	77.81079	0.099789	1.041216	0

2-2. By changing $s^e_{SWD/WD}$

GM 1994-95: $g^e_Y > g^e_{KP}$ g^a_Y=0.076017 g^a_{KP}= 0.063055

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
		0.0172	1.1582	0.1216	66.9934	0.7731	0.094009	0.10000	0.090599	0.184608	0.0623		57.84269	0.104991

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.103764	0.175931	0.156047	0.0851	0.065383	1.233927	0.820132	0.098547	77.44754	62.7651	0.203764	0.41764	
2	0.103764	0.165134	0.145433	0.0851	0.055601	1.302535	0.820132	0.093356	88.71096	68.1064	0.203764	0.41764	0
3	0.103764	0.156436	0.136882	0.0851	0.047721	1.364693	0.820132	0.089104	100.8539	73.90226	0.203764	0.41764	0

3-2. By changing both $s^e_{SP/P}$ and $s^e_{SWD/WD}$

GM 1994-95: $g^e_Y > g^e_{KP}$ g^a_Y=0.076017 g^a_{KP}= 0.063055

parameters	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
		0.0172	1.1582	0.1216	66.9934	0.9	0.10944	0.10000	0.089056	0.198496	0.0623		57.84269	0.104991

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.122889	0.192444	0.172281	0.103902	0.061943	1.229943	0.845494	0.098866	78.53509	63.85265	0.222889	0.46616	
2	0.122889	0.181219	0.161246	0.103902	0.051946	1.293834	0.845494	0.093984	91.19853	70.48706	0.222889	0.46616	0
3	0.122889	0.17227	0.152448	0.103902	0.043977	1.350733	0.845494	0.090025	105.1016	77.81079	0.222889	0.46616	-2.38E-16

GM (3)

ALTERNATIVE POLICIES in the long run: by changing each parameter: π, Ω_P, and n

Balanced Growth State GM 1994-95: $g^e_Y > g^e_{KP}$ $g^a_Y = 0.076017$ $g^a_{KP} = 0.063055$

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0172	1.1582	0.1216	66.9934	0.463349	0.056343	0.008914	0.008411	0.064755		0.059707	57.84269	0.104991

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$	
1	0.059707	0.059707	0.041789	0.041789	-6.66E-18	1.1582	0.69989	0.104991	69.79296	60.25985	0.069153	0.604291		
2	0.059707	0.059707	0.041789	0.041789	-6.66E-18	1.1582	0.69989	0.104991	72.70951	62.77803	0.069153	0.604291		0
3	0.059707	0.059707	0.041789	0.041789	-6.66E-18	1.1582	0.69989	0.104991	75.74794	65.40143	0.069153	0.604291		0

4-1. By changing π: by using tax rate and adjusting wage level and others

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0172	1.1582	0.18	66.9934	0.463349	0.083403	0.013194	0.012094	0.095497		0.090992	57.84269	0.155414

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$	
1	0.090992	0.090992	0.072544	0.072544	0	1.1582	0.797259	0.155414	71.85337	62.03883	0.105387	0.688361		
2	0.090992	0.090992	0.072544	0.072544	0	1.1582	0.797259	0.155414	77.06591	66.53938	0.105387	0.688361		0
3	0.090992	0.090992	0.072544	0.072544	0	1.1582	0.797259	0.155414	82.65658	71.36641	0.105387	0.688361		0

4-2. By changing π: by using tax rate and adjusting wage level and others

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0172	1.1582	0.1	66.9934	0.463349	0.046335	0.00733	0.006991	0.053325		0.048586	57.84269	0.086341

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$	
1	0.048586	0.048586	0.030855	0.030855	0	1.1582	0.635066	0.086341	69.06051	59.62745	0.056272	0.548322		
2	0.048586	0.048586	0.030855	0.030855	0	1.1582	0.635066	0.086341	71.1914	61.46728	0.056272	0.548322		0
3	0.048586	0.048586	0.030855	0.030855	0	1.1582	0.635066	0.086341	73.38804	63.36388	0.056272	0.548322		0

5-1. By changing Ω_P: using tax rate and depreciation ratio and others

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0172	1.5	0.1216	66.9934	0.4	0.04864	0.02432	0.023137	0.071777		0.051127	44.66227	0.081067

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$	
1	0.051127	0.051127	0.033353	0.033353	-6.71E-18	1.5	0.652361	0.081067	69.22784	46.15189	0.07669	0.434907		
2	0.051127	0.051127	0.033353	0.033353	-6.71E-18	1.5	0.652361	0.081067	71.53681	47.6912	0.07669	0.434907		0
3	0.051127	0.051127	0.033353	0.033353	-6.71E-18	1.5	0.652361	0.081067	73.92278	49.28185	0.07669	0.434907		0

GM (4)

5-2. By changing Ω_P: using tax rate and depreciation ratio and others

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0172	0.9	0.1216	66.9934	0.526316	0.064	-0.0064	-0.00599	0.05801		0.068376	74.43711	0.135111

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	k(t)	y(t)	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.068376	0.068376	0.050311	0.050311	0	0.9	0.735794	0.135111	70.36389	78.1821	0.061538	0.817549	
2	0.068376	0.068376	0.050311	0.050311	0	0.9	0.735794	0.135111	73.90394	82.11549	0.061538	0.817549	0
3	0.068376	0.068376	0.050311	0.050311	0	0.9	0.735794	0.135111	77.62211	86.24678	0.061538	0.817549	0

6-1. By changing n as the growth rate of workers

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.04	1.1582	0.1216	66.9934	0.463349	0.056343	0.008914	0.008411	0.064755		0.059707	57.84269	0.104991

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	k(t)	y(t)	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.059707	0.059707	0.018949	0.018949	-6.81E-18	1.1582	0.317371	0.104991	68.26288	58.93877	0.069153	0.274021	
2	0.059707	0.059707	0.018949	0.018949	-6.81E-18	1.1582	0.317371	0.104991	69.55642	60.05562	0.069153	0.274021	0
3	0.059707	0.059707	0.018949	0.018949	-6.81E-18	1.1582	0.317371	0.104991	70.87447	61.19364	0.069153	0.274021	0

6-2. By changing n as the growth rate of workers

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	-0.01	1.1582	0.1216	66.9934	0.463349	0.056343	0.008914	0.008411	0.064755		0.059707	57.84269	0.104991

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	k(t)	y(t)	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.059707	0.059707	0.070411	0.070411	-1.3E-17	1.1582	1.179276	0.104991	71.7105	61.91548	0.069153	1.018197	
2	0.059707	0.059707	0.070411	0.070411	-1.3E-17	1.1582	1.179276	0.104991	76.75975	66.27504	0.069153	1.018197	0
3	0.059707	0.059707	0.070411	0.070411	-1.3E-17	1.1582	1.179276	0.104991	82.16451	70.94156	0.069153	1.018197	0

6-3. By changing n and Ω_P

parameters	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0	0.9	0.1216	66.9934	0.526316	0.064	-0.0064	-0.00599	0.05801		0.068376	74.43711	0.135111

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	k(t)	y(t)	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.068376	0.068376	0.068376	0.068376	0	0.9	1	0.135111	71.57415	79.52683	0.061538	1.111111	
2	0.068376	0.068376	0.068376	0.068376	0	0.9	1	0.135111	76.4681	84.96456	0.061538	1.111111	0
3	0.068376	0.068376	0.068376	0.068376	0	0.9	1	0.135111	81.69669	90.7741	0.061538	1.111111	0

Isowa data 97

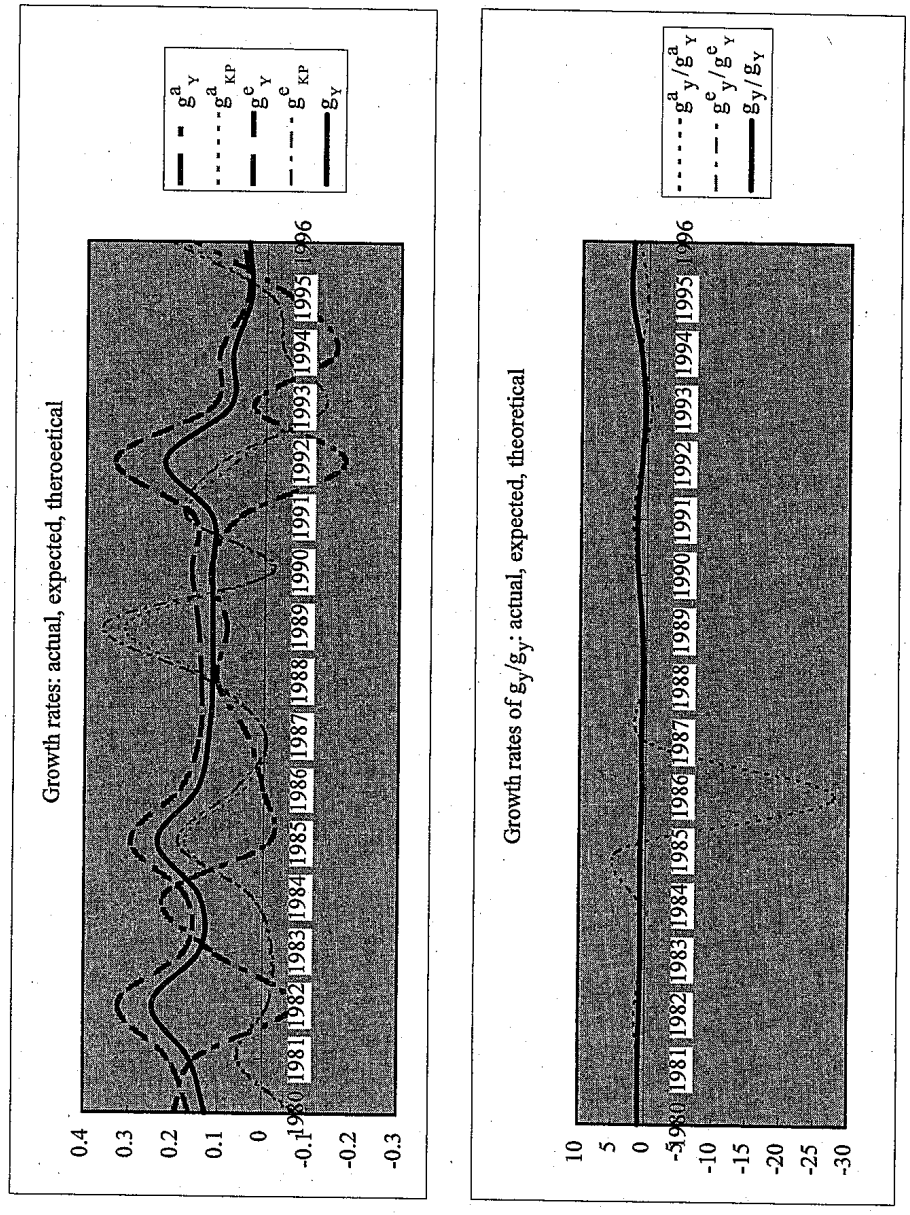
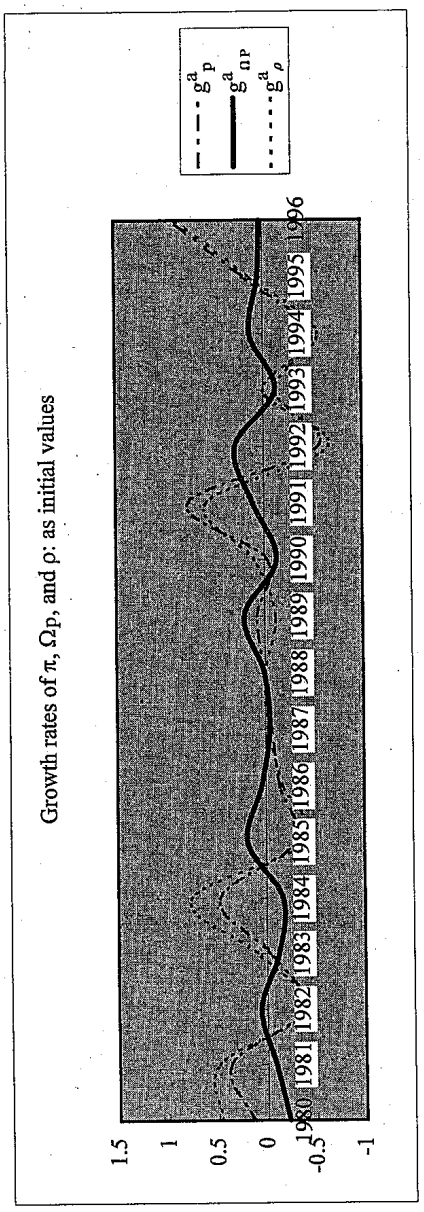


Figure 1 Isowa: changes in 1982, 1984, 1989, 1992, 1996

Isowa data 97



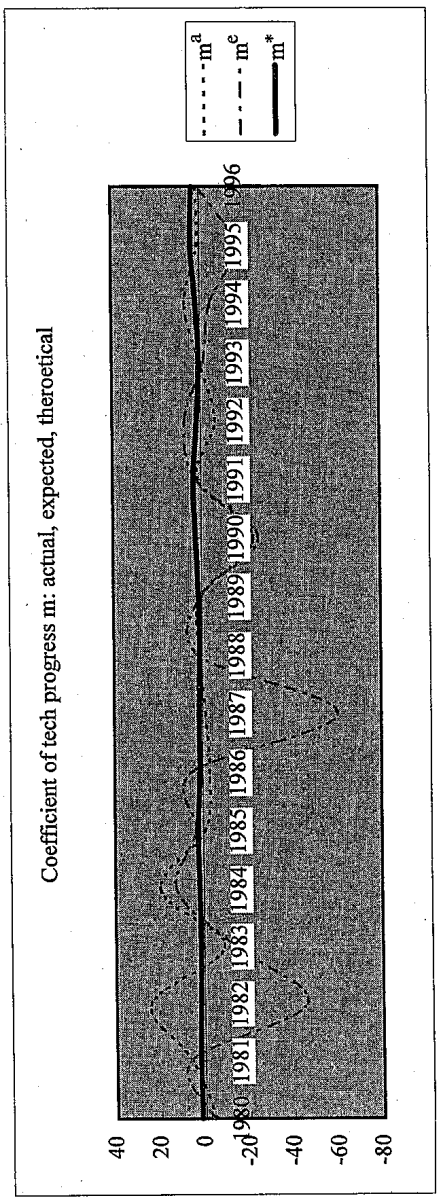


Table 2 Isowa 1996March: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	-0.0483	0.6656	0.0656	4239	0.600384	0.039385	-0.01317	-0.012652	0.026734		0.041	6368.69	0.098558

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.28859	0.098558	4636.754	6966.277	0.02729	3.438383	
2	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.288588	0.098558	5071.831	7619.938	0.02729	3.438383	0.0000
3	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.288588	0.098558	5547.731	8334.932	0.02729	3.438383	0.0000

Isowa1996March: $g^e_Y<g^e_{KP}$ $g^a_Y=0.159041$ $g^a_{KP}=0.1955$

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	-0.0483	0.6656	0.0656	4239	0.7678	0.050368	0.08400	0.079769	0.130137	0.032		6368.69	0.098558

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.0530	0.2059	0.2671	0.1065	0.1452	0.7622	2.0076	0.0861	5371	7047	0.1370	0.7770	
2	0.0530	0.1798	0.2397	0.1065	0.1204	0.8540	2.0076	0.0768	6658	7797	0.1370	0.7770	0.0000
3	0.0530	0.1605	0.2194	0.1065	0.1020	0.9411	2.0076	0.0697	8119	8627	0.1370	0.7770	0.0000
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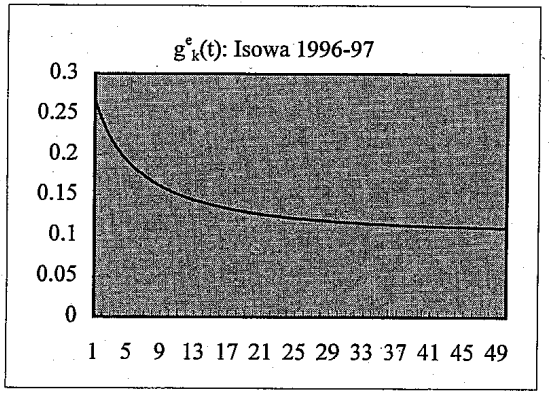
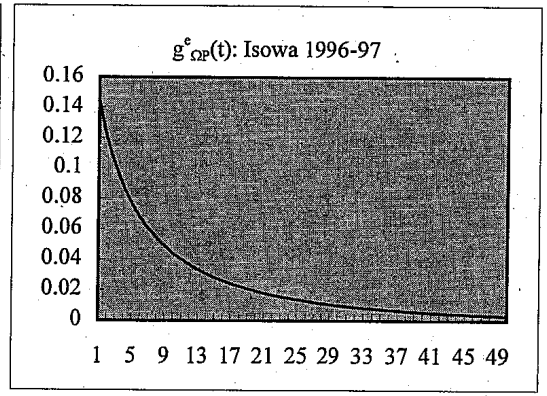
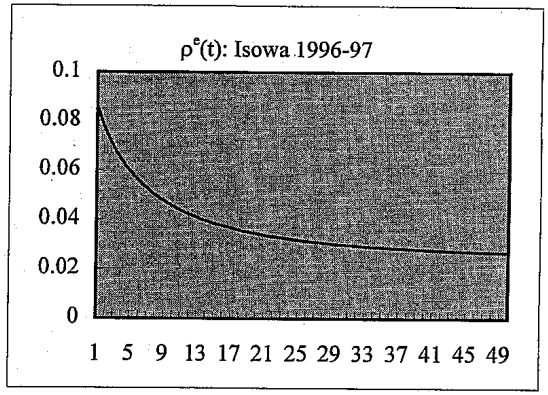
48	0.0530	0.0568	0.1104	0.1065	0.0035	2.4232	2.0076	0.0271	1985065	819188	0.1370	0.7770	0.0000
49	0.0530	0.0566	0.1102	0.1065	0.0033	2.4313	2.0076	0.0270	2203767	906417	0.1370	0.7770	0.0000
50	0.0530	0.0564	0.1100	0.1065	0.0032	2.4390	2.0076	0.0269	2446130	1002934	0.1370	0.7770	0.0000







Isowa simulation 97

Isowa1992March: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0264	0.4871	0.2733	4680	0.67245	0.183781	-0.094261	-0.076938	0.1068428		0.225161	9607.883	0.561076
period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.225161	0.225161	0.193648	0.193648	-2.33E-17	0.4871	0.86005	0.561076	5586.2742	11468.434	0.109676	1.765644	
2	0.225161	0.225161	0.193648	0.193648	-2.33E-17	0.4871	0.86005	0.561076	6668.0469	13689.2772	0.109676	1.765644	0
3	0.225161	0.225161	0.193648	0.193648	-2.33E-17	0.4871	0.86005	0.561076	7959.3031	16340.183	0.109676	1.765644	0

Isowa1992March: $g^e_Y>g^e_{KP}$ $g^a_Y=-0.17794$ $g^a_{KP}=0.0633$

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0264	0.4871	0.2733	4680	0.9207	0.251627	-0.295	-0.22077	0.0308574	0.0573		9607.883	0.561076
period	$g^e_Y(t)$	**$g^e_{KP}(t)$**	**$g^e_k(t)$**	$g^e_y(t)$	**$g^e_{\Omega P}(t)$**	**$\Omega^e_P(t)$**	$\chi^e(t)=g^e_y/g^e_Y$	**$\rho^e(t)$**	**$k^e(t)$**	**$y^e(t)$**	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.3362	0.0846	0.0568	0.3019	-0.1883	0.3954	0.8978	0.6912	4946	12508	0.0412	7.3210	
2	0.3362	0.1043	0.0759	0.3019	-0.1736	0.3268	0.8978	0.8364	5321	16284	0.0412	7.3210	0.0000
3	0.3362	0.1262	0.0972	0.3019	-0.1572	0.2754	0.8978	0.9924	5838	21199	0.0412	7.3210	0.0000
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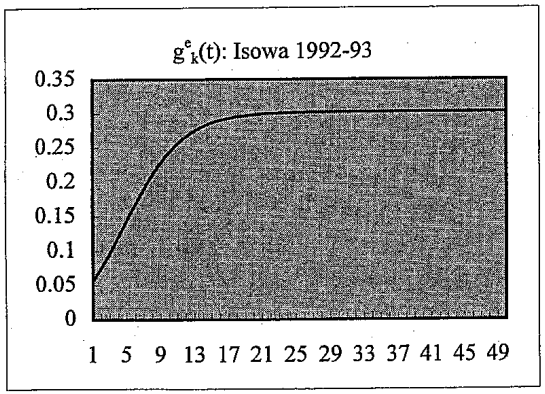
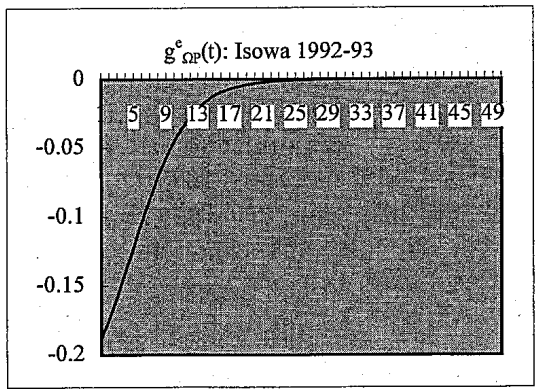
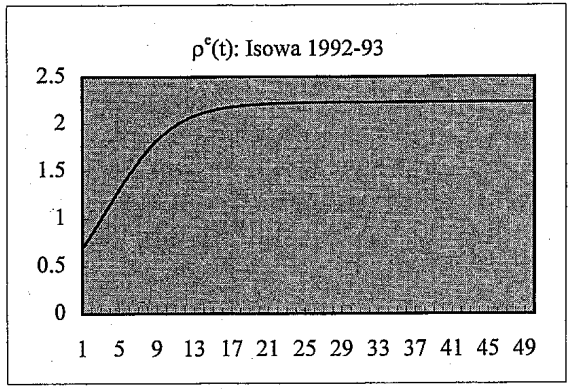
48	0.3362	0.3362	0.3019	0.3019	0.0000	0.1226	0.8978	2.2286	371852261	3032272115	0.0412	7.3210	0.0000
49	0.3362	0.3362	0.3019	0.3019	0.0000	0.1226	0.8978	2.2286	484100529	3947604162	0.0412	7.3210	0.0000
50	0.3362	0.3362	0.3019	0.3019	0.0000	0.1226	0.8978	2.2286	630232453	5139241475	0.0412	7.3210	0.0000







Isowa1989March: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0396	0.4109	0.1475	2934	0.708767	0.104543	-0.061586	-0.055148	0.049395		0.116748	7140.423	0.358968

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.116748	0.116748	0.07421	0.07421	-2.58E-17	0.4109	0.63564	0.358968	3151.731	7670.313	0.047972	1.546941	
2	0.116748	0.116748	0.07421	0.07421	-2.58E-17	0.4109	0.63564	0.358968	3385.621	8239.524	0.047972	1.546941	0
3	0.116748	0.116748	0.07421	0.07421	-2.58E-17	0.4109	0.63564	0.358968	3636.867	8850.978	0.047972	1.546941	0

Isowa1989March: $g^e_Y<g^e_{KP}$ $g^a_Y=0.0840$ $g^a_{KP}=0.3097$

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0396	0.4109	0.1475	2934	0.8743	0.128959	-0.0019	-0.001655	0.127304	0.0567		7140.423	0.358968

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.1481	0.3557	0.3040	0.1043	0.1809	0.4852	0.7046	0.3040	3826	7885	0.1462	0.7138	
2	0.1481	0.3012	0.2516	0.1043	0.1334	0.5499	0.7046	0.2682	4789	8708	0.1462	0.7138	0.0000
3	0.1481	0.2658	0.2175	0.1043	0.1025	0.6063	0.7046	0.2433	5831	9616	0.1462	0.7138	0.0000
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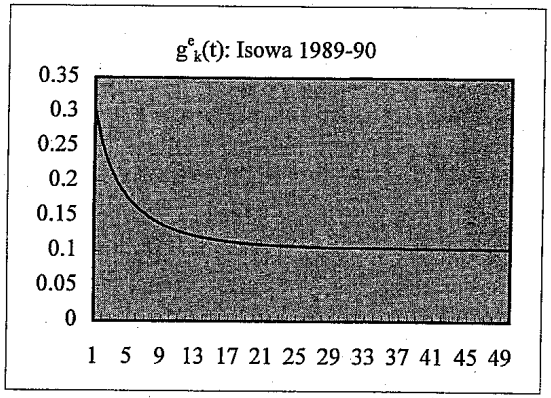
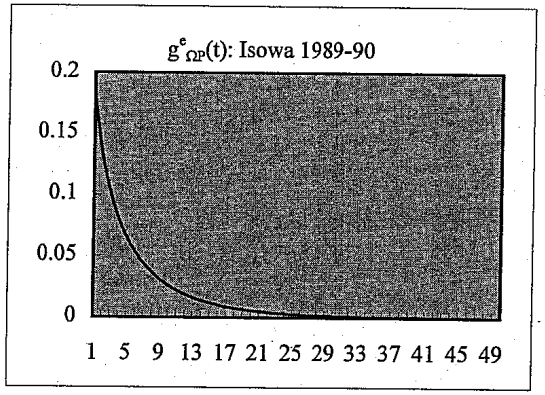
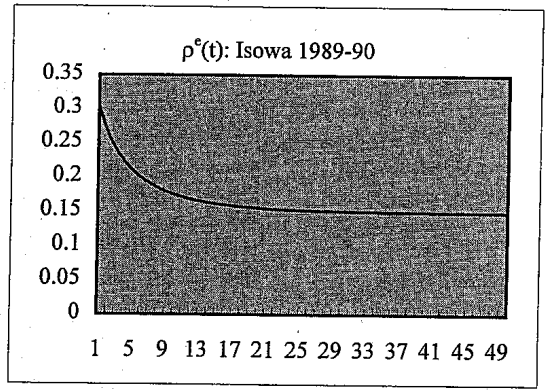
48	0.1481	0.1482	0.1044	0.1043	0.0001	0.9864	0.7046	0.1495	824804	836173	0.1462	0.7138	0.0000
49	0.1481	0.1482	0.1044	0.1043	0.0001	0.9865	0.7046	0.1495	910940	923403	0.1462	0.7138	0.0000
50	0.1481	0.1482	0.1044	0.1043	0.0001	0.9866	0.7046	0.1495	1006057	1019734	0.1462	0.7138	0.0000







Isowa simulation 97

Isowa1984March: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	0.0311	0.4081	0.1748	2590	0.710177	0.124139	-0.073478	-0.064356	0.059783		0.141734	6346.484	0.428326

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.141734	0.141734	0.107297	0.107297	0	0.4081	0.757031	0.428326	2867.898	7027.44	0.057841	1.855012	
2	0.141734	0.141734	0.107297	0.107297	0	0.4081	0.757031	0.428326	3175.614	7781.461	0.057841	1.855012	0
3	0.141734	0.141734	0.107297	0.107297	0	0.4081	0.757031	0.428326	3516.347	8616.385	0.057841	1.855012	0

Isowa1984March: $g^e_Y>g^e_{KP}$ $g^a_Y=0.2236$ $g^a_{KP}=0.0232$

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0311	0.4081	0.1748	2590	0.8405	0.146919	-0.1612	-0.137517	0.009403	0.0654		6346.484	0.428326

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.1722	0.0270	-0.0040	0.1369	-0.1239	0.3575	0.7947	0.4889	2580	7215	0.0110	12.4173	
2	0.1722	0.0308	-0.0003	0.1369	-0.1206	0.3144	0.7947	0.5559	2579	8203	0.0110	12.4173	0.0000
3	0.1722	0.0351	0.0038	0.1369	-0.1170	0.2776	0.7947	0.6296	2589	9325	0.0110	12.4173	0.0000
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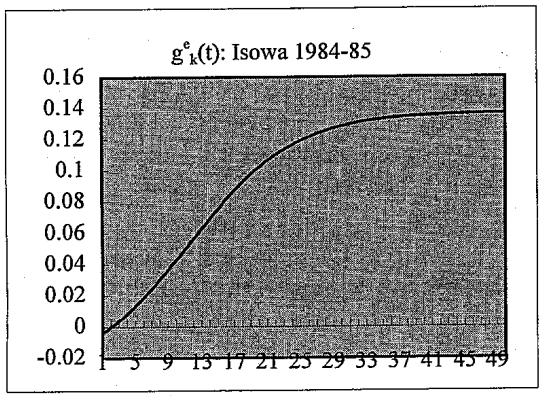
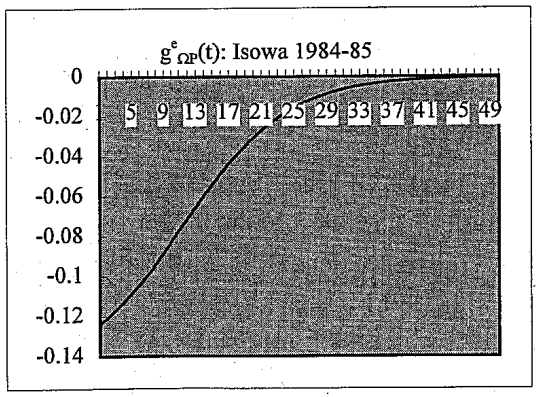
48	0.1722	0.1717	0.1364	0.1369	-0.0004	0.0642	0.7947	2.7241	192259	2996210	0.0110	12.4173	0.0000
49	0.1722	0.1718	0.1364	0.1369	-0.0004	0.0641	0.7947	2.7252	218489	3406288	0.0110	12.4173	0.0000
50	0.1722	0.1718	0.1365	0.1369	-0.0003	0.0641	0.7947	2.7261	248311	3872492	0.0110	12.4173	0.0000





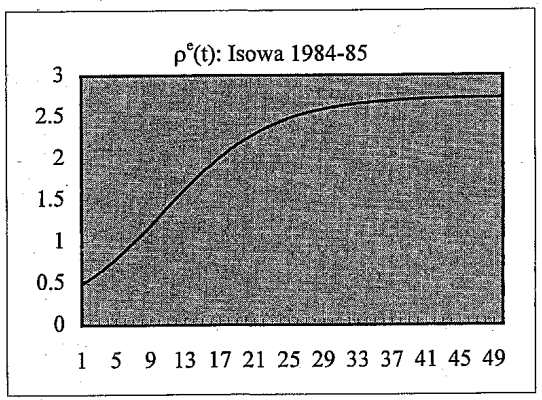


Table 3 Alternative policies for Isowa 1996-97 **Isowa(1)**

Balanced Growth State Isowa1996March: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$

paramete n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
-0.0483	0.6656	0.0656	4239	0.600384	0.039385	-0.01317	-0.012652	0.026734		0.041	6368.69	0.098558

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.28859	0.098558	4636.754	6966.277	0.02729	3.438383	
2	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.288588	0.098558	5071.831	7619.938	0.02729	3.438383	0
3	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.288588	0.098558	5547.731	8334.932	0.02729	3.438383	0

Unbalanced Growth State Isowa1996: $g^e_Y>g^e_{KP}$ $g^a_Y=0.076017$ $g^a_{KP}= 0.063055$

paramete n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
-0.0483	0.6656	0.0656	4239	0.7678	0.050368	0.08400	0.079769	0.130137	0.032		6368.69	0.098558

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.053039	0.205888	0.267089	0.106482	0.14515	0.762212	2.007616	0.086065	5371.188	7046.842	0.137039	0.777021	
2	0.053039	0.179791	0.239667	0.106482	0.120368	0.853958	2.007616	0.076819	6658.486	7797.206	0.137039	0.777021	2.86E-16
3	0.053039	0.160475	0.219371	0.106482	0.102025	0.941083	2.007616	0.069707	8119.164	8627.47	0.137039	0.777021	0

ALTERNATIVE POLICIES in the short-run : by changing $s^e_{SP/P}$ or $s^e_{SWD/WD}$

1-1. By changing $s^e_{SP/P}$

Isowa1996: $g^e_Y>g^e_{KP}$ $g^a_Y=0.076017$ $g^a_{KP}= 0.063055$

paramete n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
-0.0483	0.6656	0.0656	4239	0.4	0.02624	0.08400	0.081796	0.108036	0.032		6368.69	0.098558

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.026947	0.166687	0.225898	0.079066	0.136073	0.75617	2.934119	0.086753	5196.583	6872.237	0.110947	0.712646	
2	0.026947	0.146722	0.20492	0.079066	0.116632	0.844364	2.934119	0.077692	6261.466	7415.597	0.110947	0.712646	-3.12E-16
3	0.026947	0.131397	0.188817	0.079066	0.101709	0.930244	2.934119	0.070519	7443.737	8001.918	0.110947	0.712646	1.56E-16

2-1. By changing $s^e_{SWD/WD}$

Isowa1996: $g^e_Y>g^e_{KP}$ $g^a_Y=0.076017$ $g^a_{KP}= 0.063055$

paramete n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
-0.0483	0.6656	0.0656	4239	0.7678	0.050368	0.03000	0.028489	0.078857	0.032		6368.69	0.098558

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.053039	0.124758	0.181841	0.106482	0.068107	0.710932	2.007616	0.092273	5009.825	7046.842	0.083039	1.282314	
2	0.053039	0.116803	0.173482	0.106482	0.060552	0.753981	2.007616	0.087005	5878.942	7797.206	0.083039	1.282314	0
3	0.053039	0.110134	0.166475	0.106482	0.054219	0.794861	2.007616	0.08253	6857.639	8627.47	0.083039	1.282314	-1.73E-16

Isowa alternative policies

Isowa(2)

3-1. By changing both $s^e_{SP/P}$ and $s^e_{SWD/WD}$

Isowa1996: $g^e_Y > g^e_{KP}$ g^a_Y=0.076017 g^a_{KP}= 0.063055

paramete n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	-0.0483	0.6656	0.0656	4239	0.4	0.02624	0.03000	0.029213	0.055453	0.032		6368.69	0.098558

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.026947	0.085558	0.140651	0.079066	0.057073	0.703587	2.934119	0.093236	4835.219	6872.237	0.056947	1.388411	
2	0.026947	0.080938	0.135797	0.079066	0.052574	0.740578	2.934119	0.088579	5491.829	7415.597	0.056947	1.388411	0
3	0.026947	0.076895	0.131549	0.079066	0.048638	0.776598	2.934119	0.084471	6214.275	8001.918	0.056947	1.388411	-1.6E-16

1-2. By changing $s^e_{SP/P}$

Isowa1996: $g^e_Y > g^e_{KP}$ g^a_Y=0.076017 g^a_{KP}= 0.063055

paramete n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	-0.0483	0.6656	0.0656	4239	0.9	0.05904	0.08400	0.079041	0.138081	0.032		6368.69	0.098558

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.062744	0.220469	0.28241	0.11668	0.148413	0.764384	1.859609	0.085821	5436.135	7111.789	0.146744	0.795124	
2	0.062744	0.191977	0.252472	0.11668	0.121603	0.857335	1.859609	0.076516	6808.606	7941.593	0.146744	0.795124	0
3	0.062744	0.171163	0.230602	0.11668	0.102018	0.944799	1.859609	0.069433	8378.681	8868.219	0.146744	0.795124	-1.4E-16

2-2. By changing $s^e_{SWD/WD}$

Isowa1996: $g^e_Y > g^e_{KP}$ g^a_Y=0.076017 g^a_{KP}= 0.063055

paramete n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	-0.0483	0.6656	0.0656	4239	0.7678	0.050368	0.12000	0.113956	0.164324	0.032		6368.69	0.098558

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.053039	0.259975	0.32392	0.106482	0.196513	0.796399	2.007616	0.082371	5612.097	7046.842	0.173039	0.615365	
2	0.053039	0.217277	0.279055	0.106482	0.155966	0.92061	2.007616	0.071257	7178.183	7797.206	0.173039	0.615365	0
3	0.053039	0.187961	0.248252	0.106482	0.128127	1.038564	2.007616	0.063164	8960.181	8627.47	0.173039	0.615365	0

3-2. By changing both $s^e_{SP/P}$ and $s^e_{SWD/WD}$

Isowa1996: $g^e_Y > g^e_{KP}$ g^a_Y=0.076017 g^a_{KP}= 0.063055

paramete n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	-0.0483	0.6656	0.0656	4239	0.9	0.05904	0.12000	0.112915	0.171955	0.032		6368.69	0.098558

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.062744	0.274556	0.339241	0.11668	0.199306	0.798258	1.859609	0.082179	5677.044	7111.789	0.182744	0.638488	
2	0.062744	0.228929	0.291299	0.11668	0.156373	0.923084	1.859609	0.071066	7330.759	7941.593	0.182744	0.638488	1.74E-16
3	0.062744	0.197972	0.25877	0.11668	0.127243	1.040541	1.859609	0.063044	9227.741	8868.219	0.182744	0.638488	0

ALTERNATIVE POLICIES in the long run: by changing each parameter: π, Ω_P, and n **Isowa(3)**

Balanced Growth State Isowa1996: $g^e_Y > g^e_{KP}$ $g^a_Y = 0.076017$ $g^a_{KP} = 0.063055$

paramete	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	-0.0483	0.6656	0.0656	4239	0.600384	0.039385	-0.01317	-0.012652	0.026734		0.041	6368.69	0.098558

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.28859	0.098558	4636.754	6966.277	0.02729	3.438383	
2	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.288588	0.098558	5071.831	7619.938	0.02729	3.438383	0
3	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.288588	0.098558	5547.731	8334.932	0.02729	3.438383	0

4-1. By changing π: by using tax rate and adjusting wage level and others

paramete	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	-0.0483	0.6656	0.08	4239	0.600384	0.048031	-0.016061	-0.01529	0.032741		0.050454	6368.69	0.120192

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.050454	0.050454	0.103766	0.103766	0	0.6656	2.05664	0.120192	4678.864	7029.543	0.033582	3.089907	
2	0.050454	0.050454	0.103766	0.103766	0	0.6656	2.056642	0.120192	5164.371	7758.971	0.033582	3.089907	0
3	0.050454	0.050454	0.103766	0.103766	0	0.6656	2.056642	0.120192	5700.257	8564.088	0.033582	3.089907	0

4-2. By changing π: by using tax rate and adjusting wage level and others

paramete	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	-0.0483	0.6656	0.05	4239	0.600384	0.030019	-0.010038	-0.009737	0.020282		0.030948	6368.69	0.07512

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.030948	0.030948	0.08327	0.08327	0	0.6656	2.69063	0.07512	4591.982	6899.012	0.020599	4.042408	
2	0.030948	0.030948	0.08327	0.08327	0	0.6656	2.690627	0.07512	4974.358	7473.494	0.020599	4.042408	0
3	0.030948	0.030948	0.08327	0.08327	0	0.6656	2.690627	0.07512	5388.574	8095.814	0.020599	4.042408	0

5-1. By changing Ω_P: using tax rate and depreciation ratio and others

paramete	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
	-0.0483	1	0.0656	4239	0.5	0.0328	0	0	0.0328		0.033912	4239	0.0656

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.033912	0.033912	0.086385	0.086385	0	1	2.5473	0.0656	4605.185	4605.185	0.033912	2.547295	
2	0.033912	0.033912	0.086385	0.086385	0	1	2.547295	0.0656	5003.002	5003.002	0.033912	2.547295	0
3	0.033912	0.033912	0.086385	0.086385	0	1	2.547295	0.0656	5435.185	5435.185	0.033912	2.547295	0

5-2. By changing Ω_P: using tax rate and depreciation ratio and others

Isowa(4)

paramete n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
-0.0483	0.5	0.0656	4239	0.666667	0.043733	-0.021867	-0.02091	0.022823		0.045733	8478	0.1312

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.045733	0.045733	0.098806	0.098806	1.26E-17	0.5	2.16047	0.1312	4657.837	9315.675	0.022867	4.320943	
2	0.045733	0.045733	0.098806	0.098806	1.26E-17	0.5	2.160472	0.1312	5118.058	10236.12	0.022867	4.320943	0
3	0.045733	0.045733	0.098806	0.098806	1.26E-17	0.5	2.160472	0.1312	5623.752	11247.5	0.022867	4.320943	0

6-1. By changing n as the growth rate of workers

paramete **n**	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
0.01	0.6656	0.0656	4239	0.600384	0.039385	-0.01317	-0.012652	0.026734		0.041	6368.69	0.098558

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.041	0.041	0.030693	0.030693	6.73E-18	0.6656	0.74861	0.098558	4369.108	6564.165	0.02729	1.124717	
2	0.041	0.041	0.030693	0.030693	6.73E-18	0.6656	0.748611	0.098558	4503.209	6765.639	0.02729	1.124717	0
3	0.041	0.041	0.030693	0.030693	6.73E-18	0.6656	0.748611	0.098558	4641.427	6973.297	0.02729	1.124717	0

6-2. By changing n as the growth rate of workers

paramete **n**	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
-0.06	0.6656	0.0656	4239	0.600384	0.039385	-0.01317	-0.012652	0.026734		0.041	6368.69	0.098558

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.041	0.041	0.107447	0.107447	0	0.6656	2.62065	0.098558	4694.467	7052.985	0.02729	3.93728	
2	0.041	0.041	0.107447	0.107447	0	0.6656	2.620654	0.098558	5198.873	7810.806	0.02729	3.93728	0
3	0.041	0.041	0.107447	0.107447	0	0.6656	2.620654	0.098558	5757.475	8650.052	0.02729	3.93728	0

6-3. By changing n and Ω_P

paramete **n**	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	variables	$\delta=g_Y$	y^0	ρ^0
0	0.6656	0.0656	4239	0.600384	0.039385	-0.01317	-0.012652	0.026734		0.041	6368.69	0.098558

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.041	0.041	0.041	0.041	6.67E-18	0.6656	1	0.098558	4412.799	6629.806	0.02729	1.502404	
2	0.041	0.041	0.041	0.041	6.67E-18	0.6656	1	0.098558	4593.724	6901.628	0.02729	1.502404	0
3	0.041	0.041	0.041	0.041	6.67E-18	0.6656	1	0.098558	4782.066	7184.595	0.02729	1.502404	0

Isowa gem as given

Table 4 Isowa 1996March: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$ **gm=0**: no technological change **LATEST**

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	**gm**	variables	y^0	ρ^0
	-0.0483	0.6656	0.0656	4239	0.600384	0.039385	-0.01317	-0.012652	0.026734	0.01		6368.69	0.098558

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.288588	0.098558	4636.754	6966.277	0.02729	3.438383	
2	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.288588	0.098558	5071.831	7619.938	0.02729	3.438383	0
3	0.041	0.041	0.093832	0.093832	1.27E-17	0.6656	2.288588	0.098558	5547.731	8334.932	0.02729	3.438383	0

Isowa 1996:$g^e_Y<g^e_{KP}$ **3** g^e_m= **0.01** $g^e_{KP}(1)$ =$K$37/(D37*(1-$H$37)) $g^e_{KP}(2)$ =N40/I39 **2** **1**

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	-0.0483	0.6656	0.0656	4239	0.7678	0.024	0.08400	0.0488	0.0728	0.032		6368.69	0.098558

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.0530	0.1152	0.1718	0.1065	0.0590	0.7049	2.0076	0.0931	4967	7047	0.0767	1.3890	GIVEN
2	0.0530	0.1077	0.1639	0.1065	0.0519	0.7415	2.0076	0.0885	5781	7797	0.0759	1.4029	0.0100
3	0.0530	0.1014	0.1573	0.1065	0.0459	0.7755	2.0076	0.0846	6690	8627	0.0752	1.4169	0.0100
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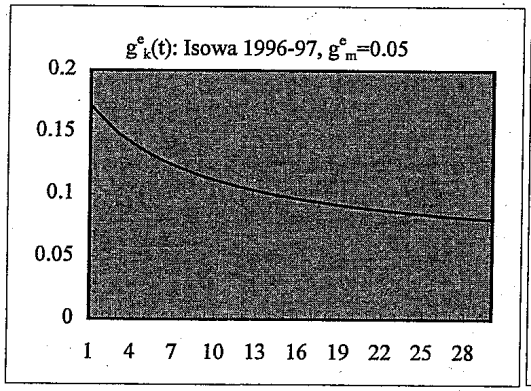
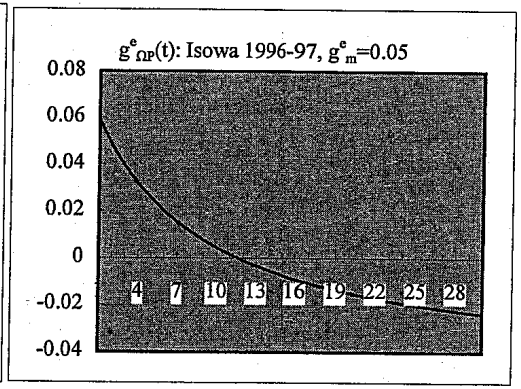
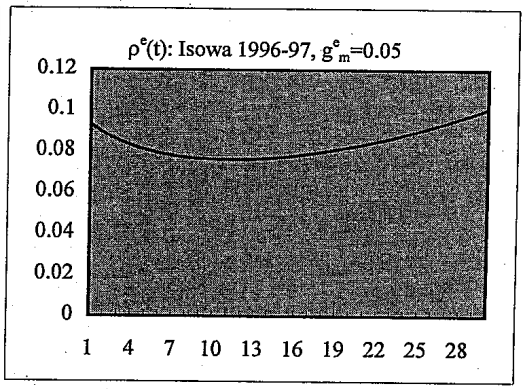
27.0000	0.0530	0.0541	0.1076	0.1065	0.0010	1.0944	2.0076	0.0599	107082	97848	0.0592	1.7991	0.0100
28.0000	**0.0530**	**0.0535**	**0.1070**	**0.1065**	**0.0005**	**1.0949**	**2.0076**	**0.0599**	**118542**	**108267**	**0.0586**	**1.8171**	**0.0100**
29.0000	0.0530	0.0530	0.1064	0.1065	0.0000	1.0949	2.0076	0.0599	131158	119795	0.0580	1.8353	0.0100

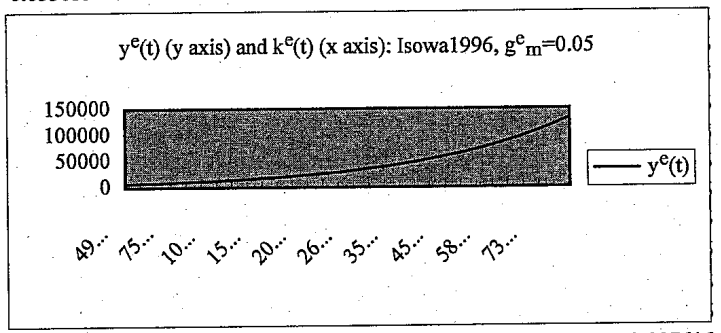






Isowa gem as given

Isowa 1996: $g^e_Y < g^e_{KP}$		3	g^e_m= 0.01	$g^e_{KP}(1)$ =$K$37/(D37*(1-$H$37))				$g^e_{KP}(2)$ =N40/I39		2	1	
Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	$1+g^e_Y$	δ^a	y^0	ρ^0	
If g^e_m=0		-0.0483	0.6656	0.0656	4239	0.7678	0.050368	0.08400	0.079769	0.0728	1.053039	0.032	6368.69	0.098558
$g^e_{KP}(t)$	period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
0.115176	1	0.053039	0.115176	0.171773	0.106482	0.059007	0.704875	2.007616	0.093066	4967.145	7046.842	0.076661	1.388997	GIVEN
0.108759	2								0.088804	5759.84	7797.206	0.073011	1.458447	0.05
0.103778	3								0.085469	6621.846	8627.47	0.069534	1.531369	0.05
0.09988	4								0.082853	7558.245	9546.142	0.066223	1.607937	0.05
0.096824	5								0.080811	8574.461	10562.64	0.063069	1.688334	0.05
0.094437	6								0.079234	9676.282	11687.37	0.060066	1.772751	0.05
0.092594	7								0.078044	10869.88	12931.87	0.057206	1.861389	0.05
0.091204	8								0.077181	12161.85	14308.88	0.054482	1.954458	0.05
0.090195	9								0.076598	13559.21	15832.52	0.051887	2.052181	0.05
0.089514	10								0.076261	15069.45	17518.4	0.049417	2.15479	0.05
0.08912	11								0.07614	16700.56	19383.8	0.047063	2.262529	0.05
0.088978	12								0.076213	18461.06	21447.83	0.044822	2.375656	0.05
0.089064	13	0.053039	0.049594	0.102862	0.106482	-0.003271	0.857927	2.007616	0.076463	20360.01	23731.65	0.042688	2.494439	0.05
0.089356	14	0.053039	0.047388	0.100544	0.106482	-0.005367	0.853322	2.007616	0.076876	22407.08	26258.65	0.040655	2.619161	0.05
0.089839	15	0.053039	0.045375	0.098429	0.106482	-0.007279	0.847111	2.007616	0.07744	24612.58	29054.72	0.038719	2.750119	0.05
0.090497	16	0.053039	0.043531	0.096491	0.106482	-0.009029	0.839462	2.007616	0.078145	26987.48	32148.54	0.036875	2.887625	0.05
0.091322	17	0.053039	0.041836	0.09471	0.106482	-0.010639	0.830531	2.007616	0.078986	29543.47	35571.78	0.035119	3.032006	0.05
0.092304	18	0.053039	0.040272	0.093067	0.106482	-0.012124	0.820462	2.007616	0.079955	32292.99	39359.55	0.033447	3.183606	0.05
0.093437	19	0.053039	0.038825	0.091547	0.106482	-0.013498	0.809387	2.007616	0.081049	35249.31	43550.64	0.031854	3.342786	0.05
0.094715	20	0.053039	0.037482	0.090136	0.106482	-0.014774	0.797429	2.007616	0.082264	38426.52	48188.01	0.030337	3.509926	0.05
0.096135	21	0.053039	0.036232	0.088823	0.106482	-0.01596	0.784702	2.007616	0.083599	41839.67	53319.17	0.028893	3.685422	0.05
0.097695	22	0.053039	0.035067	0.087598	0.106482	-0.017067	0.771309	2.007616	0.08505	45504.73	58996.72	0.027517	3.869693	0.05
0.099391	23	0.053039	0.033977	0.086452	0.106482	-0.018102	0.757347	2.007616	0.086618	49438.72	65278.82	0.026207	4.063178	0.05
0.101223	24	0.053039	0.032955	0.085379	0.106482	-0.019072	0.742903	2.007616	0.088302	53659.77	72229.86	0.024959	4.266337	0.05
0.103191	25	0.053039	0.031996	0.084372	0.106482	-0.019983	0.728057	2.007616	0.090103	58187.12	79921.05	0.02377	4.479654	0.05
0.105296	26	0.053039	0.031094	0.083423	0.106482	-0.02084	0.712885	2.007616	0.09202	63041.29	88431.22	0.022638	4.703636	0.05
0.107537	27	0.053039	0.030244	0.08253	0.106482	-0.021647	0.697453	2.007616	0.094057	68244.08	97847.58	0.02156	4.938818	0.05
0.109916	28	0.053039	0.029441	0.081686	0.106482	-0.02241	0.681823	2.007616	0.096213	73818.68	108266.6	0.020534	5.185759	0.05
0.112436	29	0.053039	0.028682	0.080889	0.106482	-0.023131	0.666052	2.007616	0.098491	79789.77	119795.1	0.019556	5.445047	0.05
0.115098	30	0.053039	0.027963	0.080133	0.106482	-0.023813	0.650191	2.007616	0.100893	86183.57	132551.1	0.018625	5.717299	0.05



Isowa gem as given

Case 1-1: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$ **gm=0**: no technological change

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$	**gm**	variables	y^0	ρ^0
	0.01	2	0.08	11	0.333333	0.026667	0.026667	0.025956	0.052622	0.01		5.5	0.04

period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.041	0.041	0.093832	0.093832	1.27E-17	2	2.28859	0.0328	12.03215	6.016076	0.082	1.144294	
2	0.041	0.041	0.093832	0.093832	1.27E-17	2	2.288588	0.0328	13.16116	6.580578	0.082	1.144294	0
3	0.041	0.041	0.093832	0.093832	1.27E-17	2	2.288588	0.0328	14.39609	7.198047	0.082	1.144294	0

Case 1-2: $g^e_Y<g^e_{KP}$ **3** g^e_m= **0.05** $g^e_{KP}(1)$ =$K$37/(D37*(1-$H$37)) $g^e_{KP}(2)$ =N40/I39 **2** **1**

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	variables	y^0	ρ^0
	0.01	2	0.08	11	0.3	0.024	0.05	0.0488	0.0728		5.5	0.04

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.02459	0.037295	0.027025	0.014446	0.0124	2.0248	0.587459	0.03951	11.29727	5.579451	0.07459	0.193668	GIVEN
2	0.02459	0.035084	0.024836	0.014446	0.010242	2.045538	0.587459	0.03911	11.57785	5.660051	0.071038	0.203351	0.05
3	0.02459	0.033075	0.022846	0.014446	0.008281	2.062477	0.587459	0.038788	11.84236	5.741814	0.067655	0.213519	0.05
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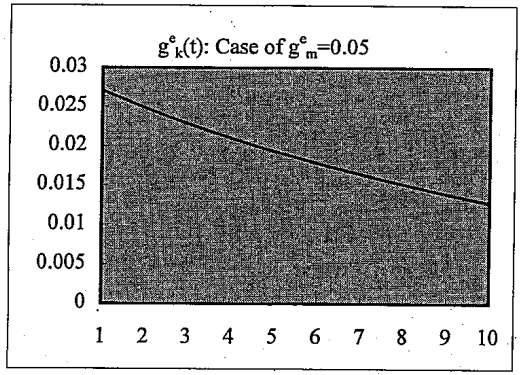
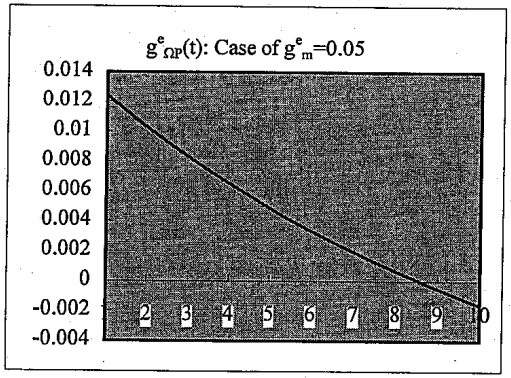
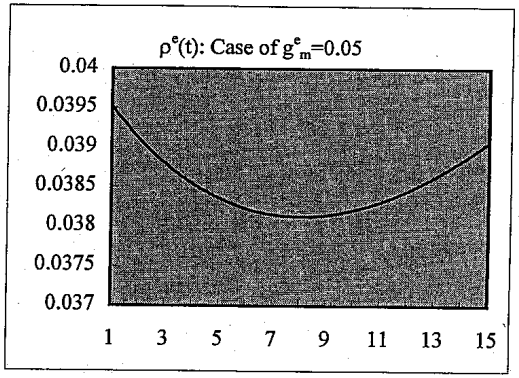
8	0.02459	0.025279	0.015128	0.014446	0.000672	2.098419	0.587459	0.038124	12.9445	6.168693	0.05301	0.27251	0.05
9	**0.02459**	**0.024059**	**0.01392**	**0.014446**	**-0.000519**	**2.097331**	**0.587459**	**0.038144**	**13.12469**	**6.257804**	**0.050486**	**0.286135**	**0.05**
10	0.02459	0.022925	0.012797	0.014446	-0.001625	2.093922	0.587459	0.038206	13.29264	6.348203	0.048081	0.300442	0.05

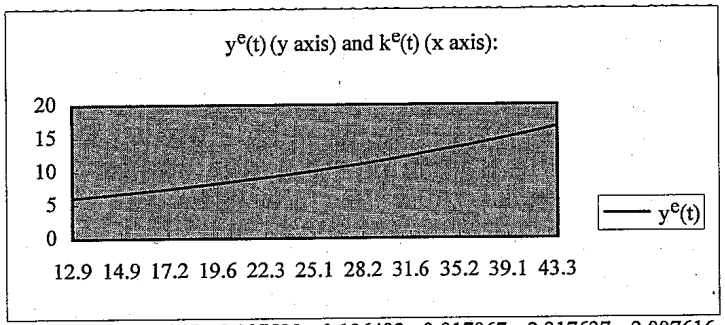






Isowa gem as given

Case 1-2: $g^e_Y<g^e_{KP}$		g^e_m= 0.05	3									2	1	
Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	$1+g^e_Y$	variables	y^0	ρ^0	
If g^e_m=0		0.01	2	0.08	11	0.3	0.024	0.05	0.0488	0.0728	1.053039		5.5	0.04
$g^e_{KP}(t)$	period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
0.038331	1	0.053039	0.115176	0.171773	0.106482	0.059007	2.118015	2.007616	0.030972	12.8895	6.085652	0.230352	0.462258	**GIVEN**
0.036195	2	0.053039	0.10358	0.159588	0.106482	0.047995	2.219668	2.007616	0.029554	14.94651	6.733666	0.219383	0.485371	0.05
0.034537	3	0.053039	0.09413	0.149658	0.106482	0.039021	2.306282	2.007616	0.028444	17.18337	7.450682	0.208936	0.50964	0.05
0.03324	4	0.053039	0.08628	0.141411	0.106482	0.031567	2.379084	2.007616	0.027574	19.61328	8.244047	0.198987	0.535122	0.05
0.032223	5	0.053039	0.079657	0.134451	0.106482	0.025277	2.439221	2.007616	0.026894	22.25031	9.121892	0.189511	0.561878	0.05
0.031429	6	0.053039	0.073994	0.1285	0.106482	0.019899	2.48776	2.007616	0.026369	25.10948	10.09321	0.180487	0.589972	0.05
0.030815	7	0.053039	0.069095	0.123353	0.106482	0.015247	2.525692	2.007616	0.025973	28.20682	11.16796	0.171892	0.61947	0.05
0.030353	8	0.053039	0.064817	0.118858	0.106482	0.011184	2.55394	2.007616	0.025686	31.55941	12.35715	0.163707	0.650444	0.05
0.030017	**9**	**0.053039**	**0.061047**	**0.114897**	**0.106482**	**0.007605**	**2.573363**	**2.007616**	**0.025492**	**35.18549**	**13.67296**	**0.155912**	**0.682966**	**0.05**
0.02979	10	0.053039	0.057702	0.111381	0.106482	0.004428	2.584756	2.007616	0.02538	39.1045	15.12889	0.148487	0.717114	0.05
0.029659	11								0.025339	43.33716	16.73985	0.141416	0.75297	0.05
0.029612	12								0.025364	47.90556	18.52235	0.134682	0.790618	0.05
0.029641	13								0.025447	52.83324	20.49465	0.128269	0.830149	0.05
0.029738	14								0.025584	58.1453	22.67696	0.122161	0.871657	0.05
0.029898	15								0.025772	63.86847	25.09166	0.116344	0.915239	0.05
0.030117	16								0.026007	70.03122	27.76347	0.110803	0.961001	0.05
0.030392	17								0.026286	76.66388	30.71979	0.105527	1.009052	0.05
0.030719	18								0.026609	83.79876	33.9909	0.100502	1.059504	0.05
0.031096	19								0.026973	91.47025	37.61033	0.095716	1.112479	0.05
0.031521	20								0.027378	99.71497	41.61516	0.091158	1.168103	0.05
0.031994	21								0.027822	108.5719	46.04643	0.086817	1.226508	0.05
0.032513	22	0.053039	0.035067	0.087598	0.106482	-0.017067	2.317637	2.007616	0.028305	118.0826	50.94956	0.082683	1.287834	0.05
0.033077	23	0.053039	0.033977	0.086452	0.106482	-0.018102	2.275682	2.007616	0.028827	128.2911	56.37478	0.078746	1.352226	0.05
0.033687	24	0.053039	0.032955	0.085379	0.106482	-0.019072	2.23228	2.007616	0.029387	139.2445	62.3777	0.074996	1.419837	0.05
0.034342	25	0.053039	0.031996	0.084372	0.106482	-0.019983	2.187673	2.007616	0.029986	150.9928	69.01981	0.071425	1.490829	0.05
0.035042	26	0.053039	0.031094	0.083423	0.106482	-0.02084	2.142082	2.007616	0.030624	163.5891	76.3692	0.068024	1.56537	0.05
0.035788	27	0.053039	0.030244	0.08253	0.106482	-0.021647	2.095712	2.007616	0.031302	177.0901	84.50116	0.064784	1.643639	0.05
0.03658	28	0.053039	0.029441	0.081686	0.106482	-0.02241	2.048748	2.007616	0.03202	191.5559	93.49903	0.061699	1.725821	0.05
0.037419	29	0.053039	0.028682	0.080889	0.106482	-0.023131	2.001359	2.007616	0.032778	207.0506	103.455	0.058761	1.812112	0.05
0.038305	30	0.053039	0.027963	0.080133	0.106482	-0.023813	1.953699	2.007616	0.033577	223.6422	114.4711	0.055963	1.902717	0.05



Isowa gem as given

Isowa1992March: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$ **gm=0**: no technological change

Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$		variables	y^0	ρ^0
	0.0264	0.4871	0.2733	4680	0.67245	0.183781	-0.094261	-0.076938	0.106843			9607.883	0.561076
period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.225161	0.225161	0.193648	0.193648	-2.33E-17	0.4871	0.860045	0.561076	5586.274	11468.43	0.109676	1.765644	
2	0.225161	0.225161	0.193648	0.193648	-2.33E-17	0.4871	0.860045	0.561076	6668.047	13689.28	0.109676	1.765644	0
3	0.225161	0.225161	0.193648	0.193648	-2.33E-17	0.4871	0.860045	0.561076	7959.303	16340.18	0.109676	1.765644	0

Isowa1992:$g^e_Y>g^e_{KP}$ **3** g^e_m= **- 0.01** $g^e_{KP}(1)$ =$K$37/(D37*(1-$H$37)) $g^e_{KP}(2)$ =N40/I39 **2** **1**

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	δ^a	variables	y^0	ρ^0
	0.0264	0.4871	0.2733	4680	0.9207	0.024	-0.295	0.0488	0.0728	0.0573		9607.883	0.561076
period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.3362	0.0846	0.0568	0.3019	-0.1883	0.3954	0.8978	0.6912	4946	12508	0.0412	7.3210	GIVEN
2	0.3362	0.1053	0.0769	0.3019	-0.1728	0.3271	0.8978	0.8356	5326	16284	0.0416	7.2478	-0.0100
3	0.3362	0.1286	0.0996	0.3019	-0.1554	0.2763	0.8978	0.9893	5856	21199	0.0421	7.1753	-0.0100
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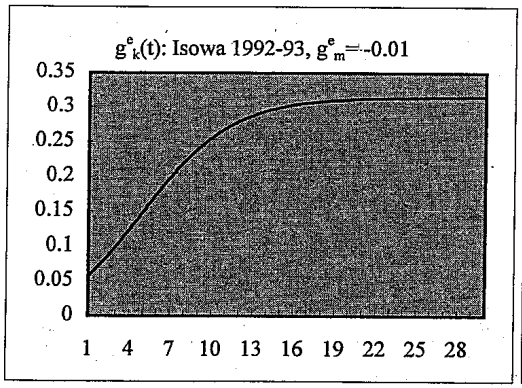
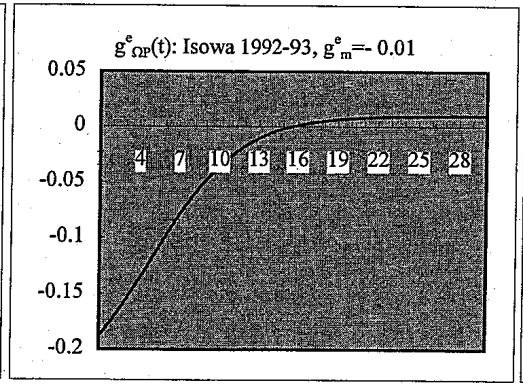
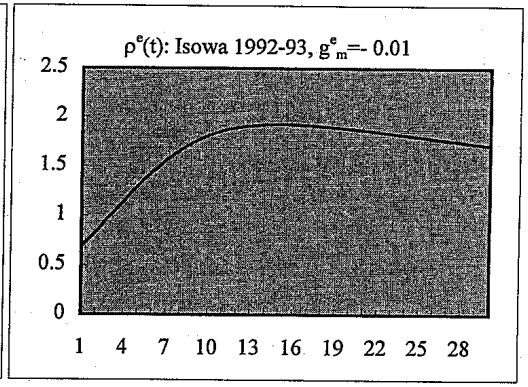
15	0.3362	0.3340	0.2997	0.3019	-0.0017	0.1419	0.8978	1.9266	71279	502469	0.0475	6.3601	-0.0100
16	0.3362	0.3380	0.3035	0.3019	0.0013	0.1420	0.8978	1.9241	92915	654146	0.0479	6.2965	-0.0100
17	0.3362	0.3409	0.3064	0.3019	0.0035	0.1425	0.8978	1.9174	121388	851608	0.0484	6.2335	-0.0100





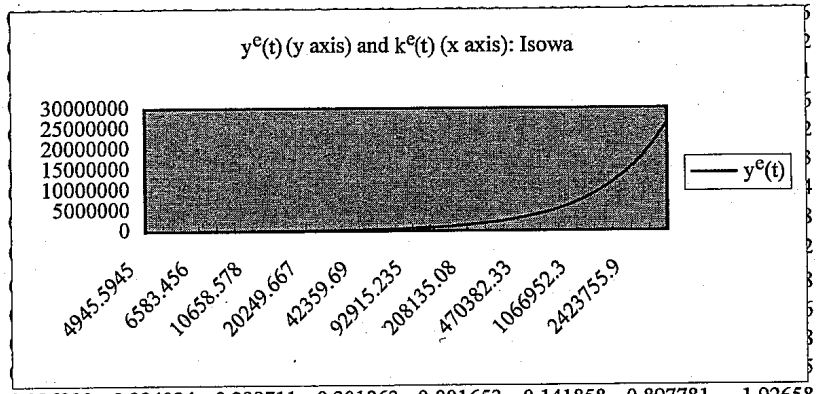


Isowa gem as given

Isowa1992: $g^e_Y > g^e_{KP}$ g^e_m=-0.01 3 $g^e_{KP}(1)$ =$K$37/(D37*(1-$H$37)) $g^e_{KP}(2)$ =N40/I39 2 1

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	$1+g^e_Y$	δ^a	y^0	ρ^0
		0.0264	0.4871	0.2733	4680	0.9207	0.251627	-0.295	-0.22077	0.030857	1.336233	0.0573	9607.883	0.561076

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.336233	0.084649	0.056751	0.301863	-0.188278	0.39539	0.897781	0.691217	4945.595	12508.15	0.041233	7.320986	GIVEN
2									5325.943	16283.91	0.041649	7.247776	-0.01
3									5856.395	21199.42	0.04207	7.175298	-0.01
4									6583.456	27598.75	0.042495	7.103545	-0.01
5									7568.302	35929.8	0.042924	7.03251	-0.01
6									8891.398	46775.7	0.043358	6.962185	-0.01
7									10658.58	60895.57	0.043796	6.892563	-0.01
8									13009.03	79277.72	0.044238	6.823637	-0.01
9									16125.82	103208.8	0.044685	6.755401	-0.01
10									20249.67	134363.7	0.045136	6.687847	-0.01
11									25697.18	174923.2	0.045592	6.620968	-0.01
12									32884.68	227726.1	0.046053	6.554759	-0.01
13									42359.69	296468.3	0.046518	6.489211	-0.01
14									54842.19	385961.2	0.046988	6.424319	-0.01
15	0.336233	0.334024	0.299711	0.301863	-0.001653	0.141858	0.897781	1.92658	71279.01	502468.8	0.047462	6.360076	-0.01
16	**0.336233**	**0.337956**	**0.303543**	**0.301863**	**0.00129**	**0.142041**	**0.897781**	**1.924098**	**92915.24**	**654145.8**	**0.047942**	**6.296475**	**-0.01**
17	0.336233	0.34093	0.30644	0.301863	0.003516	0.14254	0.897781	1.917358	121388.2	851608.5	0.048426	6.23351	-0.01
18	0.336233	0.343167	0.30862	0.301863	0.00519	0.14328	0.897781	1.907458	158851	1108678	0.048915	6.171175	-0.01
19	0.336233	0.344844	0.310253	0.301863	0.006445	0.144203	0.897781	1.895244	208135.1	1443347	0.049409	6.109463	-0.01
20	0.336233	0.346097	0.311474	0.301863	0.007382	0.145268	0.897781	1.881356	272963.8	1879041	0.049908	6.048369	-0.01
21	0.336233	0.347031	0.312384	0.301863	0.008081	0.146442	0.897781	1.866274	358233.3	2446255	0.050412	5.987885	-0.01
22	0.336233	0.347726	0.313062	0.301863	0.008602	0.147701	0.897781	1.850358	470382.3	3184689	0.050922	5.928006	-0.01
23	0.336233	0.348243	0.313565	0.301863	0.008988	0.149029	0.897781	1.833874	617877.8	4146031	0.051436	5.868726	-0.01
24	0.336233	0.348627	0.313939	0.301863	0.009276	0.150411	0.897781	1.81702	811854	5397566	0.051955	5.810039	-0.01
25	0.336233	0.348912	0.314217	0.301863	0.009489	0.151838	0.897781	1.79994	1066952	7026894	0.05248	5.751939	-0.01
26	0.336233	0.349124	0.314423	0.301863	0.009647	0.153303	0.897781	1.782741	1402427	9148056	0.05301	5.694419	-0.01
27	0.336233	0.349281	0.314576	0.301863	0.009765	0.1548	0.897781	1.765501	1843596	11909519	0.053546	5.637475	-0.01
28	0.336233	0.349397	0.314689	0.301863	0.009852	0.156325	0.897781	1.748278	2423756	15504567	0.054087	5.5811	-0.01
29	0.336233	0.349483	0.314773	0.301863	0.009916	0.157875	0.897781	1.731111	3186689	20184829	0.054633	5.525289	-0.01
30	0.336233	0.349547	0.314835	0.301863	0.009964	0.159449	0.897781	1.714032	4189972	26277891	0.055185	5.470036	-0.01



Isowa gem as given

Isowa1984March: $g^e_Y=g^e_{KP}=g_Y=g_{KP}$ **gm=0**: no technological change **GOOG GOOG**

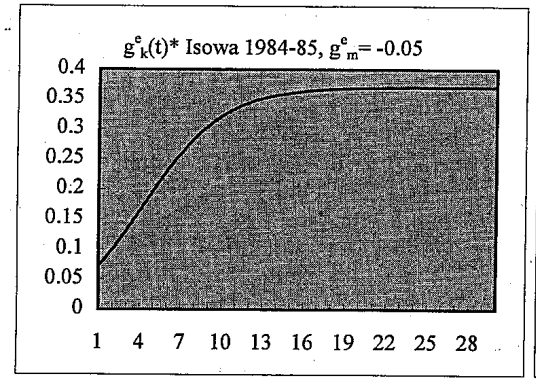
Balanced growth	n	Ω^0_P	π^0	k^0	$s_{SP/P}$	$s_{SP/Y}$	$s_{SWD/WD}$	$s_{SWD/Y}$	$s_{S/Y}$		variables	y^0	ρ^0
	0.0311	0.4081	0.1748	2590	0.710177	0.124139	-0.073478	-0.064356	0.059783			6346.484	0.428326

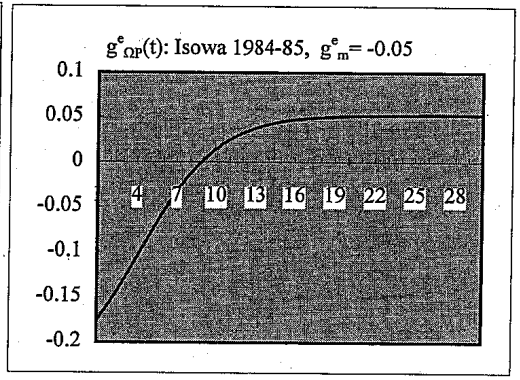
period	$g_Y(t)$	$g_{KP}(t)$	$g_k(t)$	$g_y(t)$	$g_{\Omega P}(t)$	$\Omega_P(t)$	$\chi(t)=g_y/g_Y(t)$	$\rho(t)$	**k(t)**	**y(t)**	$I/Y^0(t)$	$m^*(t)$	$g^*_m(t)$
1	0.225161	0.225161	0.193648	0.193648	-2.33E-17	0.4871	0.860045	0.561076	3091.549	6346.847	0.091888	2.107437	
2	0.225161	0.225161	0.193648	0.193648	-2.33E-17	0.4871	0.860045	0.561076	3690.223	7575.903	0.109676	1.765644	-0.162184
3	0.225161	0.225161	0.193648	0.193648	-2.33E-17	0.4871	0.860045	0.561076	4404.828	9042.964	0.109676	1.765644	0

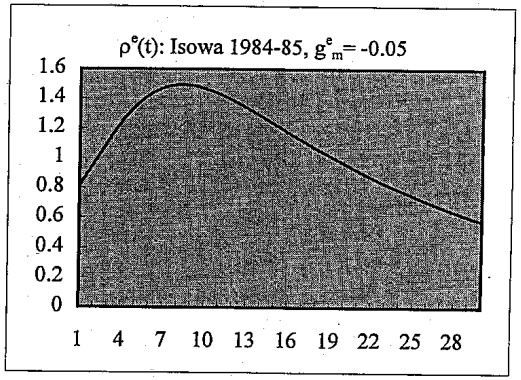
Isowa1984:$g^e_Y>g^e_{KP}$ **3** g^e_m= **- 0.05** $g^e_{KP}(1)$ =$K$37/(D37*(1-$H$37))$ $g^e_{KP}(2)$ =N40/I39 **2** **1**

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$		δ^a	y^0	ρ^0
	0.0311	0.4081	0.1748	2590	0.8405	0.024	-0.1612	0.0488	0.0728		0.0654	6346.484	0.428326

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.3362	0.1010	0.0727	0.3019	-0.1760	0.3363	0.8978	0.8127	2778	8262	0.0412	7.3210	GIVEN
2	0.3362	0.1291	0.1000	0.3019	-0.1550	0.2841	0.8978	0.9619	3056	10756	0.0434	6.9549	-0.0500
3	0.3362	0.1608	0.1309	0.3019	-0.1313	0.2468	0.8978	1.1072	3456	14003	0.0457	6.6072	-0.0500
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7.0000	0.3362	0.2924	0.2591	0.3019	-0.0328	0.1855	0.8978	1.4729	7464	40225	0.0561	5.3816	-0.0500
8.0000	**0.3362**	**0.3182**	**0.2843**	**0.3019**	**-0.0135**	**0.1830**	**0.8978**	**1.4931**	**9586**	**52367**	**0.0590**	**5.1125**	**-0.0500**
9.0000	0.3362	0.3395	0.3051	0.3019	0.0025	0.1835	0.8978	1.4894	12510	68175	0.0622	4.8569	-0.0500





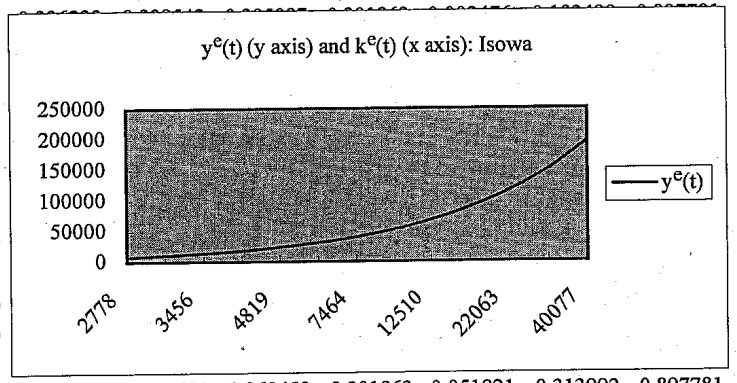


Isowa gem as given

Isowa1984: $g^e_Y > g^e_{KP}$ g^e_m=-0.05 3 2 1

Unbalanced growt	n	Ω^0_P	π^0	k^0	$s^e_{SP/P}$	$s^e_{SP/Y}$	$s^e_{SWD/WD}$	$s^e_{SWD/Y}$	$s^e_{S/Y}$	$1+g^e_Y$	δ^a	y^0	ρ^0
	0.0311	0.4081	0.1748	2590	0.8405	0.146919	-0.1612	-0.137517	0.009403	1.336233	0.0654	6346.484	0.428326

period	$g^e_Y(t)$	$g^e_{KP}(t)$	$g^e_k(t)$	$g^e_y(t)$	$g^e_{\Omega P}(t)$	$\Omega^e_P(t)$	$\chi^e(t)=g^e_y/g^e_Y$	$\rho^e(t)$	$k^e(t)$	$y^e(t)$	$I^e/Y^{e0}(t)$	$m^e(t)$	$g^e_m(t)$
1	0.336233	0.101036	0.072716	0.301863	-0.176015	0.336268	0.897781	0.812744	2778	8262	0.041233	7.320986	**GIVEN**
2	0.336233	0.129072	0.100031	0.301863	-0.155033	0.284135	0.897781	0.961865	3056	10756	0.043403	6.954937	-0.05
3	0.336233	0.160793	0.130937	0.301863	-0.131294	0.24683	0.897781	1.107239	3456	14003	0.045687	6.60719	-0.05
4	0.336233	0.194837	0.164105	0.301863	-0.105816	0.220711	0.897781	1.238268	4024	18230	0.048092	6.27683	-0.05
5	0.336233	0.229362	0.197742	0.301863	-0.079979	0.203059	0.897781	1.345913	4819	23733	0.050623	5.962989	-0.05
6	0.336233	0.262422	0.229951	0.301863	-0.055238	0.191843	0.897781	1.424605	5927	30898	0.053287	5.664839	-0.05
7	0.336233	0.292384	0.259143	0.301863	-0.032815	0.185547	0.897781	1.472939	7464	40225	0.056092	5.381597	-0.05
8	**0.336233**	**0.318215**	**0.284309**	**0.301863**	**-0.013484**	**0.183045**	**0.897781**	**1.493072**	**9586**	**52367**	**0.059044**	**5.112517**	**-0.05**
9								1.489383	12510	68175	0.062152	4.856892	-0.05
10								1.467099	16534	88754	0.065423	4.614047	-0.05
11								1.431274	22063	115545	0.068866	4.383345	-0.05
12								1.386248	29656	150424	0.072491	4.164177	-0.05
13								1.335467	40077	195832	0.076306	3.955969	-0.05
14								1.281514	54371	254947	0.080322	3.75817	-0.05
15								1.226249	73973	331906	0.084549	3.570262	-0.05
16								1.17096	100850	432096	0.088999	3.391749	-0.05
17								1.116517	137695	562530	0.093684	3.222161	-0.05
18								1.063482	188200	732337	0.098614	3.061053	-0.05
19								1.0122	257424	953402	0.103804	2.908	-0.05
20								0.962873	352300	1241200	0.109268	2.7626	-0.05
21								0.915598	482328	1615873	0.115019	2.62447	-0.05
22	0.336233	0.405611	0.369458	0.301863	0.051921	0.313992	0.897781	0.870405	660527	2103645	0.121072	2.493247	-0.05
23	0.336233	0.405885	0.369725	0.301863	0.052126	0.330359	0.897781	0.827282	904740	2738659	0.127445	2.368585	-0.05
24	0.336233	0.40608	0.369915	0.301863	0.052272	0.347627	0.897781	0.786186	1239417	3565360	0.134152	2.250155	-0.05
25	0.336233	0.406219	0.37005	0.301863	0.052376	0.365835	0.897781	0.747058	1698063	4641612	0.141213	2.137648	-0.05
26	0.336233	0.406318	0.370146	0.301863	0.05245	0.385023	0.897781	0.709828	2326594	6042745	0.148645	2.030765	-0.05
27	0.336233	0.406388	0.370214	0.301863	0.052502	0.405237	0.897781	0.67442	3187933	7866828	0.156469	1.929227	-0.05
28	0.336233	0.406438	0.370263	0.301863	0.05254	0.426528	0.897781	0.640755	4368306	10241536	0.164704	1.832766	-0.05
29	0.336233	0.406473	0.370297	0.301863	0.052566	0.448949	0.897781	0.608755	5985878	13333081	0.173372	1.741127	-0.05
30	0.336233	0.406499	0.370322	0.301863	0.052585	0.472557	0.897781	0.578342	8202581	17357851	0.182497	1.654071	-0.05



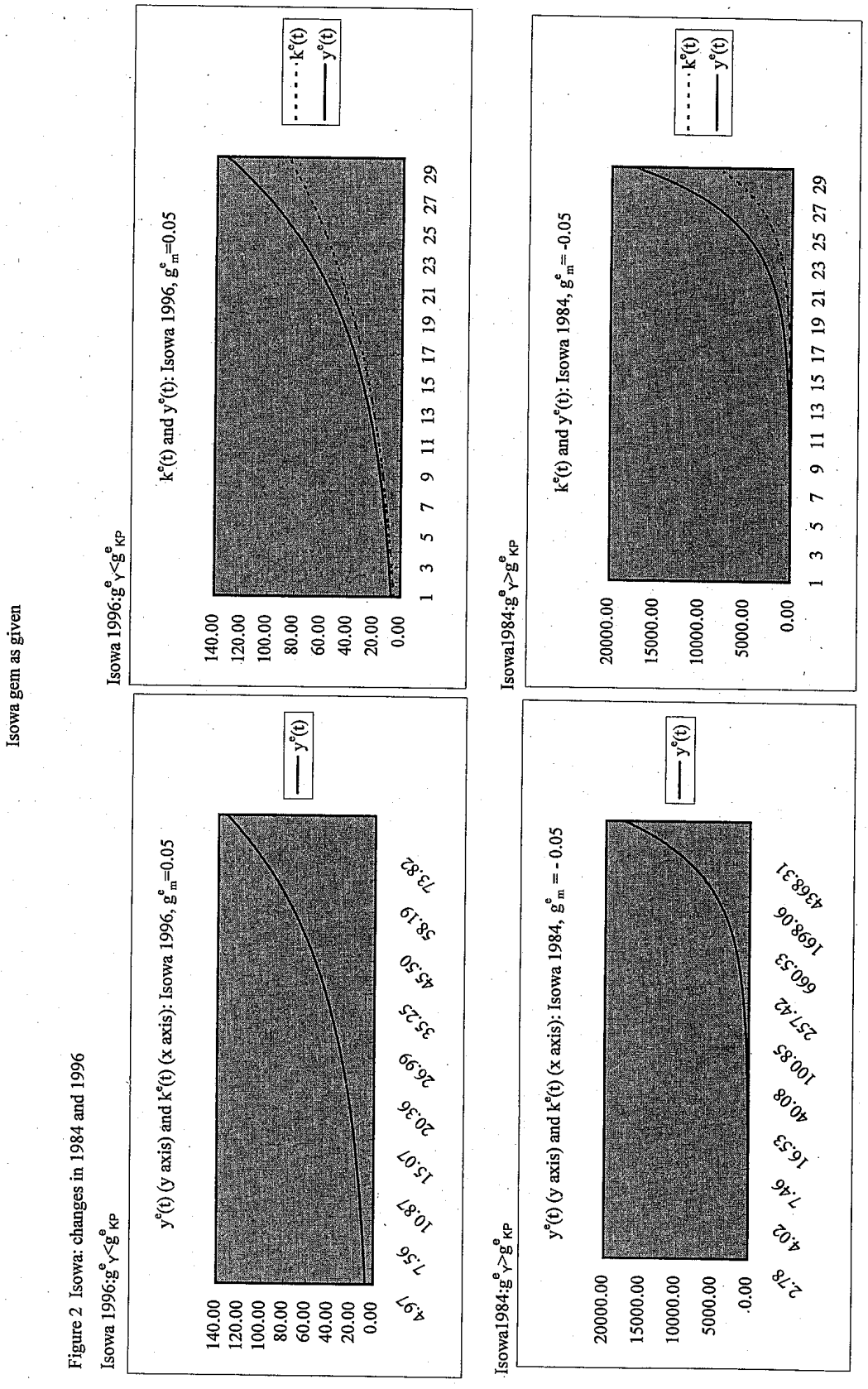
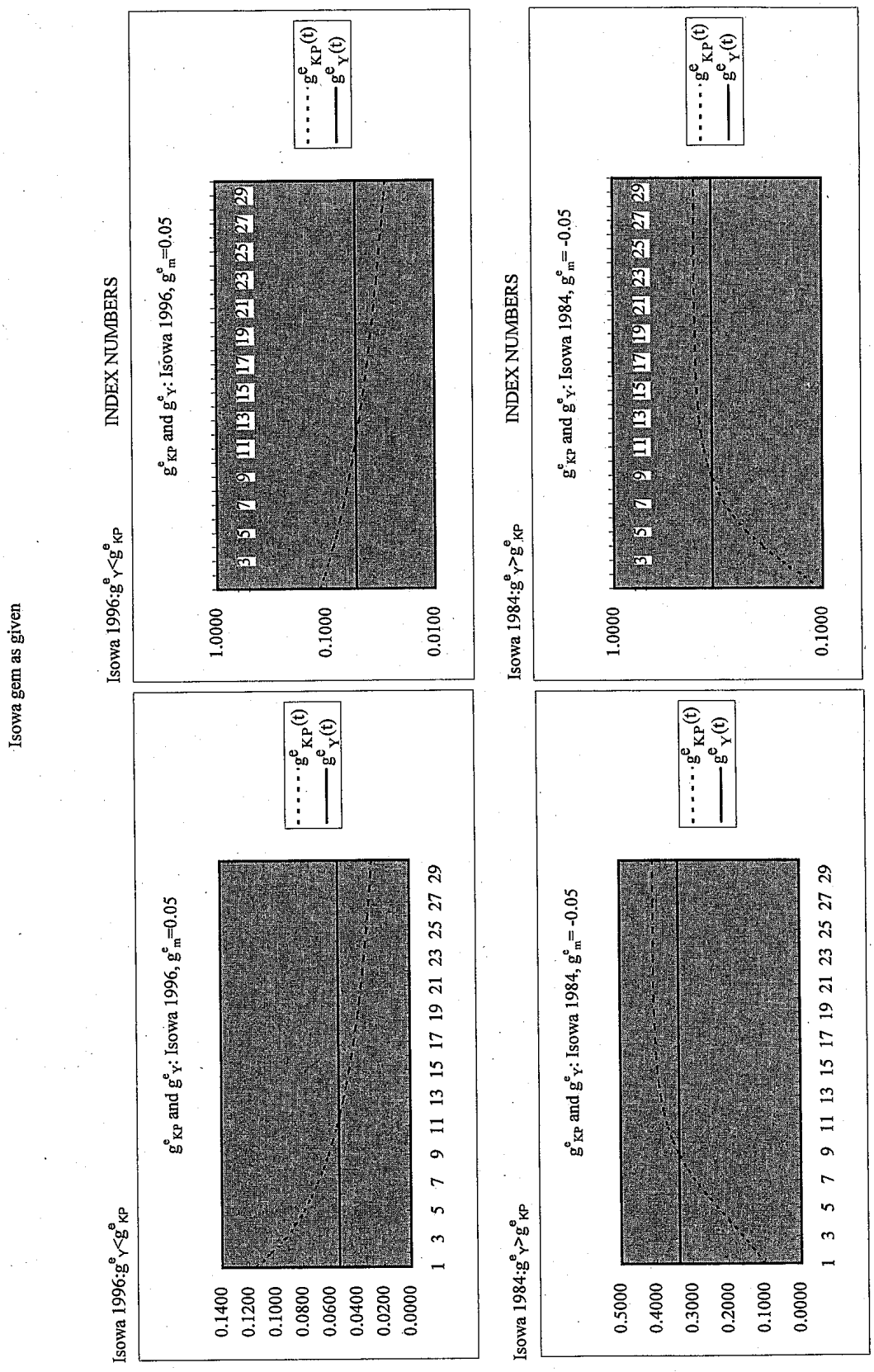
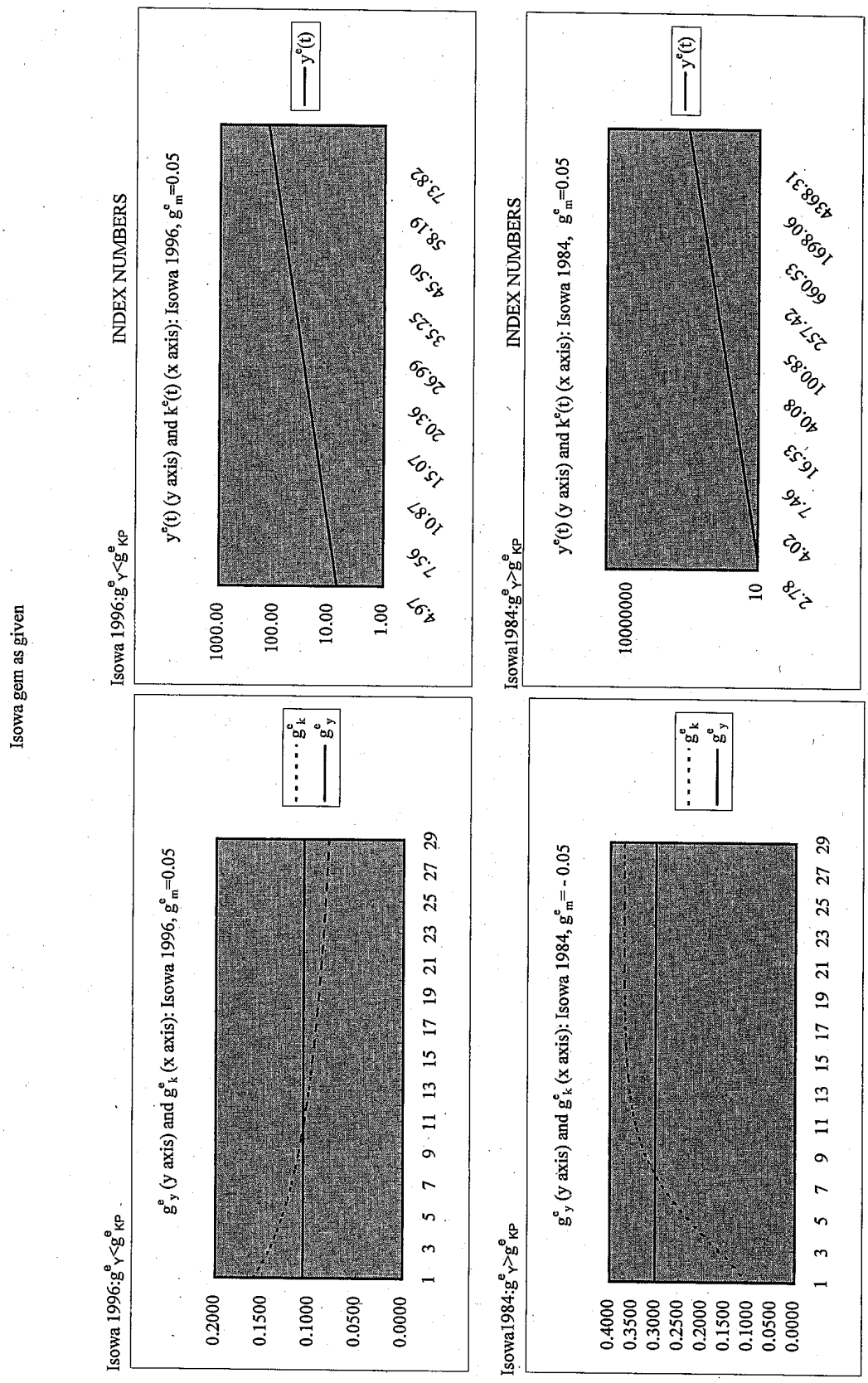


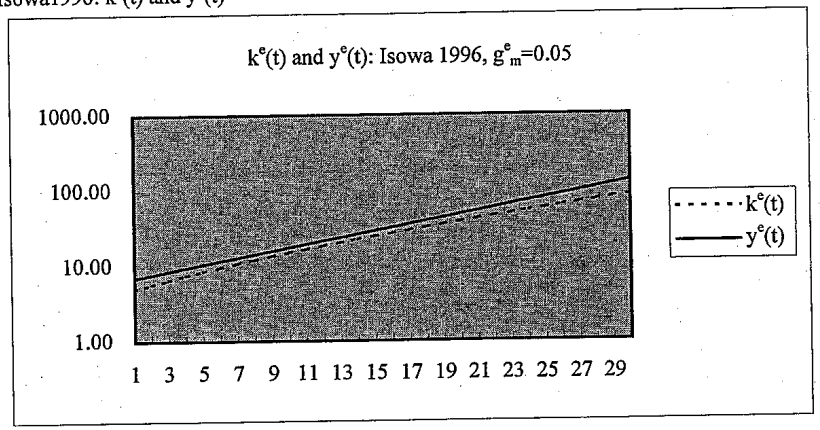
Figure 2 Isowa: changes in 1984 and 1996


Isowa gem as given
Isowa 1996:$g^e_Y<g^e_{KP}$
g^e_{KP} and g^e_Y: Isowa 1996, g^e_m=0.05
$g^e_{KP}(t)$
$g^e_Y(t)$
0.1400
0.1200
0.1000
0.0800
0.0600
0.0400
0.0200
0.0000
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29
Isowa 1996:$g^e_Y<g^e_{KP}$
INDEX NUMBERS
g^e_{KP} and g^e_Y: Isowa 1996, g^e_m=0.05
$g^e_{KP}(t)$
$g^e_Y(t)$
1.0000
0.1000
0.0100
3 5 7 9 11 13 15 17 19 21 23 25 27 29
Isowa 1984:$g^e_Y>g^e_{KP}$
g^e_{KP} and g^e_Y: Isowa 1984, g^e_m= -0.05
$g^e_{KP}(t)$
$g^e_Y(t)$
0.5000
0.4000
0.3000
0.2000
0.1000
0.0000
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29
Isowa 1984:$g^e_Y>g^e_{KP}$
INDEX NUMBERS
g^e_{KP} and g^e_Y: Isowa 1984, g^e_m= -0.05
$g^e_{KP}(t)$
$g^e_Y(t)$
1.0000
0.1000
3 5 7 9 11 13 15 17 19 21 23 25 27 29

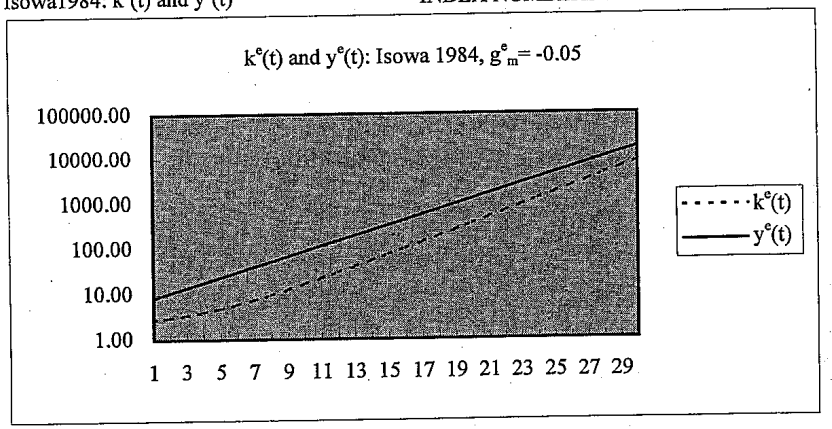

Isowa gem as given
Isowa 1996:g^e_Y<g^e_KP
INDEX NUMBERS
y^e(t) (y axis) and k^e(t) (x axis): Isowa 1996, g^e_m=0.05
1000.00
100.00
10.00
1.00
4.97 7.56 10.87 15.07 20.36 26.99 35.25 45.50 58.19 73.82
y^e(t)
g^e_y (y axis) and g^e_k (x axis): Isowa 1996, g^e_m=0.05
0.2000
0.1500
0.1000
0.0500
0.0000
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29
g^e_k
g^e_y
Isowa1984:g^e_Y>g^e_KP
INDEX NUMBERS
y^e(t) (y axis) and k^e(t) (x axis): Isowa 1984, g^e_m=0.05
10000000
10
2.78 4.02 7.46 16.53 40.08 100.85 257.42 660.53 1698.06 4368.31
y^e(t)
Isowa1984:g^e_Y>g^e_KP
g^e_y (y axis) and g^e_k (x axis): Isowa 1984, g^e_m= - 0.05
0.4000
0.3500
0.3000
0.2500
0.2000
0.1500
0.1000
0.0500
0.0000
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29
g^e_k
g^e_y

Isowa gem as given

Isowa1996: $k^e(t)$ and $y^e(t)$ INDEX NUMBERS



Isowa1984: $k^e(t)$ and $y^e(t)$ INDEX NUMBERS



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4967	7047	4.97	7.05	2778	8262	2.78	8.26
5760	7797	5.76	7.80	3056	10756	3.06	10.76
6622	8627	6.62	8.63	3456	14003	3.46	14.00
7558	9546	7.56	9.55	4024	18230	4.02	18.23
8574	10563	8.57	10.56	4819	23733	4.82	23.73
9676	11687	9.68	11.69	5927	30898	5.93	30.90
10870	12932	10.87	12.93	7464	40225	7.46	40.22
12162	14309	12.16	14.31	9586	52367	9.59	52.37
13559	15833	13.56	15.83	12510	68175	12.51	68.17
15069	17518	15.07	17.52	16534	88754	16.53	88.75
16701	19384	16.70	19.38	22063	115545	22.06	115.55
18461	21448	18.46	21.45	29656	150424	29.66	150.42
20360	23732	20.36	23.73	40077	195832	40.08	195.83
22407	26259	22.41	26.26	54371	254947	54.37	254.95
24613	29055	24.61	29.05	73973	331906	73.97	331.91
26987	32149	26.99	32.15	100850	432096	100.85	432.10
29543	35572	29.54	35.57	137695	562530	137.70	562.53
32293	39360	32.29	39.36	188200	732337	188.20	732.34
35249	43551	35.25	43.55	257424	953402	257.42	953.40
38427	48188	38.43	48.19	352300	1241200	352.30	1241.20
41840	53319	41.84	53.32	482328	1615873	482.33	1615.87
45505	58997	45.50	59.00	660527	2103645	660.53	2103.65
49439	65279	49.44	65.28	904740	2738659	904.74	2738.66
53660	72230	53.66	72.23	1239417	3565360	1239.42	3565.36
58187	79921	58.19	79.92	1698063	4641612	1698.06	4641.61
63041	88431	63.04	88.43	2326594	6042745	2326.59	6042.74
68244	97848	68.24	97.85	3187933	7866828	3187.93	7866.83
73819	108267	73.82	108.27	4368306	10241536	4368.31	10241.54
79790	119795	79.79	119.80	5985878	13333081	5985.88	13333.08
86184	132551	86.18	132.55	8202581	17357851	8202.58	17357.85