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(*Date new simulations: 04/07/2011*)
(*Objective simulations: establishing what happens to
    the skill premium with a move to FT when gamma1 becomes negative*)
(*Date intial last simulations: 16/06/2005*)
(*version 2: in function of zt*)
(*difference: the unit unskill labour requirement decreases with z*)
ClearAll[a, S, L, g0, g1, t0, t1, e, rslt, gg1, s, ss, ee1, test, zt];
ClearAll[frat, frft, w, r, solft, solat];
rslt = {{"e", "g1", "evolzt", "ztat", "ztft", "zc", "s"}};
Np[x_] := N[x, 3];

(*parameters of model*)
s = 0.99;
b = 10;
g0 = 1;
t0 = 0;
t1 = 1;
a = 100;
L = 45;
S = s L;

For[gg1 = 0; g1 = 0, gg1 < 4, gg1++,
 For[ee1 = 0; e = 0, ee1 < 20, ee1++,

ClearAll[p1, p2, p1b, p2b];
ClearAll[c, z, zt, zc, qb, pb, qc, qm, pc, r, w, LD, SD, LDA, SDA, m, n, t, test];
ClearAll[cvu, cva, ucc, spft, spat, evolsp, frat, frft, g, wat, rat, wft, rft];

(*technology definition:*)
(*loss of prodty of both fac above capa*)
(*unskilled labour requirement varies with sector*)
(*unit costs*)
cvu = w g[z];
cva = w (t[z] + g[z]);
ucc = w t[zt];

(*quantities and prices*)
(*monopoly*)
qm[c_] := L (a - c) / (2 b);
(*distribution of gamma and theta over sectors*)
g[z_] := g0 - g1 z;
t[z_] := t0 + t1 z;

(*factor markets*)
(*autarky*)
LDA[w_, zt_] := ∫_0^zt (t[z] + g[z]) qm[cva] dz + ∫_zt^1 g[z] qm[cvu + ucc] dz;
SDA[w_, zt_] := ∫_zt^1 qm[cvu + ucc] dz;

frat = NSolve[{S - SDA[w, zt] == 0, L - LDA[w, zt] == 0}, {w, zt}] ;
solat = Intersection[Select[Thread[{w /. frat, zt /. frat}], ((0 <= #1[[1]])&) ],
Select[Thread[{w /. frat, zt /. frat}], ((0 <= #1[[2]] <= 1) &) ]] ;
wat = solat[[1, 1]];
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ztat = solat[[1, 2]];

(*FREE TRADE*)
Clear[w, r, cva, cvu, ucc, zt, zc];
(*prices and quantities*)
(*Bertrand*)
qb[c_] := 2 L (a - c) / (b (1 + e) (2 - e));
pb[c_] := (a (1 - e) + c) / (2 - e);
(*Cournot*)
qc[c_] := 2 L (a - c) / (b (2 + e));
pc[c_] := (a + c (1 + e)) / (2 + e);
(*unit costs*)

cvu = w g[z];
cva = w (t[z] + g[z]);
ucc = w t[zt];

(*critical sectors*)
zc = z /. Solve[pb[cva] == pc[cvu + ucc], z][[1]];


(*factor markets*)
LD[w_, zt_] := ∫_0^zt (t[z] + g[z]) qb[cva] dz + ∫_zt^zc g[z] qb[cva] dz + ∫_zc^1 g[z] qc[cvu + ucc] dz;
SD[w_, zt_] := ∫_zt^zc qb[cva] dz + ∫_zc^1 qc[cvu + ucc] dz;
frft = NSolve[{S - SD[w, zt] == 0, L - LD[w, zt] == 0}, {w, zt}];
solft = Intersection[Select[Thread[{w /. frft, zt /. frft}], ((0 <= #1[[1]])&) ],
Select[Thread[{w /. frft, zt /. frft}], ((0 <= #1[[2]] <= 1) &) ]];
wft = solft[[1, 1]];
ztft = solft[[1, 2]];
 zt = ztft;
 w = wft;
evolzt = ztft / ztat;
qlow = qc[wft (g[zc] + t[ztft])];
AppendTo[rslt, {N[e], N[g1], Np[evolzt], Np[ztat], Np[ztft], Np[zc], N[s], Np[qlow]}];

  e = e + 0.05;
 ];
 g1 = g1 - 0.005;
]
TableForm[rslt]
ListPlot[Map[Take[#, 2]&, Select[rslt, # [[3]] < 1&]]]
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LessEqual::nord : Invalid comparison with -0.000054339 - 0.000103863 I attempted.

LessEqual::nord : Invalid comparison with -0.000054339 + 0.000103863 I attempted.

LessEqual::nord : Invalid comparison with 0.604092 + 0.562775 I attempted.

General::stop :
 Further output of LessEqual::nord will be suppressed during this calculation.
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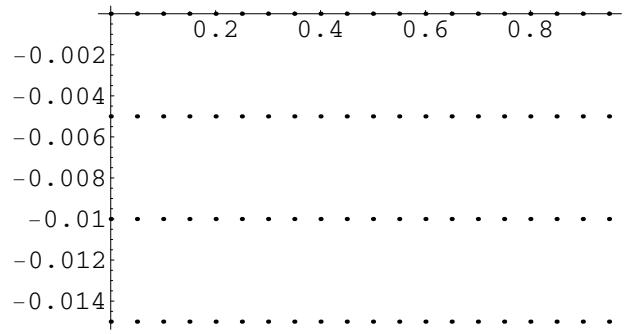
Out[66]//TableForm=

e	g1	evolzt	ztat	ztft	zc	s	
0	0	0.978	0.00977	0.00955	0.00955	0.99	45.
0.05	0	0.978	0.00977	0.00955	0.00969	0.99	45.

0.1	0	0.976	0.00977	0.00953	0.0101	0.99	45.
0.15	0	0.971	0.00977	0.00948	0.0108	0.99	45.
0.2	0	0.965	0.00977	0.00942	0.0117	0.99	45.
0.25	0	0.957	0.00977	0.00934	0.0129	0.99	45.
0.3	0	0.947	0.00977	0.00925	0.0144	0.99	45.
0.35	0	0.935	0.00977	0.00914	0.0161	0.99	45.
0.4	0	0.923	0.00977	0.00901	0.0182	0.99	44.9
0.45	0	0.908	0.00977	0.00887	0.0205	0.99	44.9
0.5	0	0.893	0.00977	0.00872	0.0231	0.99	44.9
0.55	0	0.876	0.00977	0.00855	0.026	0.99	44.9
0.6	0	0.858	0.00977	0.00837	0.0292	0.99	44.9
0.65	0	0.838	0.00977	0.00819	0.0326	0.99	44.8
0.7	0	0.818	0.00977	0.00799	0.0364	0.99	44.8
0.75	0	0.797	0.00977	0.00779	0.0404	0.99	44.7
0.8	0	0.775	0.00977	0.00757	0.0447	0.99	44.6
0.85	0	0.752	0.00977	0.00735	0.0493	0.99	44.6
0.9	0	0.729	0.00977	0.00712	0.0542	0.99	44.5
0.95	0	0.705	0.00977	0.00688	0.0593	0.99	44.3
0	−0.005	0.973	0.00733	0.00713	0.00713	0.99	45.9
0.05	−0.005	0.974	0.00733	0.00713	0.00728	0.99	45.8
0.1	−0.005	0.971	0.00733	0.00712	0.00769	0.99	45.8
0.15	−0.005	0.967	0.00733	0.00709	0.00838	0.99	45.8
0.2	−0.005	0.961	0.00733	0.00704	0.00935	0.99	45.8
0.25	−0.005	0.953	0.00733	0.00698	0.0106	0.99	45.7
0.3	−0.005	0.943	0.00733	0.00691	0.0121	0.99	45.7
0.35	−0.005	0.932	0.00733	0.00683	0.0139	0.99	45.7
0.4	−0.005	0.919	0.00733	0.00674	0.016	0.99	45.6
0.45	−0.005	0.905	0.00733	0.00663	0.0184	0.99	45.6
0.5	−0.005	0.889	0.00733	0.00652	0.0211	0.99	45.6
0.55	−0.005	0.873	0.00733	0.0064	0.0241	0.99	45.5
0.6	−0.005	0.855	0.00733	0.00626	0.0273	0.99	45.5
0.65	−0.005	0.836	0.00733	0.00613	0.0309	0.99	45.4
0.7	−0.005	0.816	0.00733	0.00598	0.0347	0.99	45.3
0.75	−0.005	0.795	0.00733	0.00583	0.0389	0.99	45.3
0.8	−0.005	0.774	0.00733	0.00567	0.0433	0.99	45.2
0.85	−0.005	0.751	0.00733	0.00551	0.048	0.99	45.1
0.9	−0.005	0.728	0.00733	0.00534	0.0529	0.99	45.
0.95	−0.005	0.705	0.00733	0.00516	0.0581	0.99	44.8
0	−0.01	0.974	0.00493	0.0048	0.0048	0.99	46.8
0.05	−0.01	0.974	0.00493	0.0048	0.00494	0.99	46.7
0.1	−0.01	0.972	0.00493	0.00479	0.00537	0.99	46.7
0.15	−0.01	0.967	0.00493	0.00476	0.00608	0.99	46.6
0.2	−0.01	0.961	0.00493	0.00473	0.00708	0.99	46.5
0.25	−0.01	0.953	0.00493	0.00469	0.00836	0.99	46.5
0.3	−0.01	0.943	0.00493	0.00465	0.00994	0.99	46.4
0.35	−0.01	0.932	0.00493	0.00459	0.0118	0.99	46.4
0.4	−0.01	0.919	0.00493	0.00453	0.014	0.99	46.3
0.45	−0.01	0.905	0.00493	0.00446	0.0164	0.99	46.3
0.5	−0.01	0.889	0.00493	0.00438	0.0192	0.99	46.2
0.55	−0.01	0.873	0.00493	0.0043	0.0222	0.99	46.2
0.6	−0.01	0.855	0.00493	0.00421	0.0256	0.99	46.1
0.65	−0.01	0.836	0.00493	0.00412	0.0292	0.99	46.
0.7	−0.01	0.817	0.00493	0.00402	0.0331	0.99	45.9
0.75	−0.01	0.796	0.00493	0.00392	0.0374	0.99	45.8
0.8	−0.01	0.775	0.00493	0.00382	0.0419	0.99	45.7
0.85	−0.01	0.754	0.00493	0.00371	0.0467	0.99	45.6
0.9	−0.01	0.731	0.00493	0.0036	0.0517	0.99	45.5
0.95	−0.01	0.708	0.00493	0.00349	0.0571	0.99	45.3
0	−0.015	0.993	0.00256	0.00254	0.00254	0.99	47.7

0.05	−0.015	0.992	0.00256	0.00254	0.00269	0.99	47.6
0.1	−0.015	0.989	0.00256	0.00253	0.00312	0.99	47.5
0.15	−0.015	0.984	0.00256	0.00252	0.00386	0.99	47.4
0.2	−0.015	0.977	0.00256	0.0025	0.00488	0.99	47.3
0.25	−0.015	0.968	0.00256	0.00247	0.00621	0.99	47.3
0.3	−0.015	0.957	0.00256	0.00245	0.00783	0.99	47.2
0.35	−0.015	0.945	0.00256	0.00242	0.00975	0.99	47.1
0.4	−0.015	0.931	0.00256	0.00238	0.012	0.99	47.
0.45	−0.015	0.917	0.00256	0.00234	0.0145	0.99	47.
0.5	−0.015	0.901	0.00256	0.0023	0.0173	0.99	46.9
0.55	−0.015	0.884	0.00256	0.00226	0.0204	0.99	46.8
0.6	−0.015	0.866	0.00256	0.00221	0.0239	0.99	46.7
0.65	−0.015	0.848	0.00256	0.00217	0.0276	0.99	46.6
0.7	−0.015	0.829	0.00256	0.00212	0.0316	0.99	46.5
0.75	−0.015	0.809	0.00256	0.00207	0.0359	0.99	46.4
0.8	−0.015	0.789	0.00256	0.00202	0.0406	0.99	46.3
0.85	−0.015	0.769	0.00256	0.00196	0.0454	0.99	46.1
0.9	−0.015	0.748	0.00256	0.00191	0.0506	0.99	46.
0.95	−0.015	0.727	0.00256	0.00186	0.0561	0.99	45.8



Out[67]= - Graphics -