

Labor Tax, rel. Pareto weights 1/2

December 22, 2017

1 Tables with Results

	No tax	Optimal policy	Optimal SS tax	Optimal Flat tax
τ_0	0.00000	-0.12778	0.02105	0.10000
$\bar{\tau}$	0.00000	0.21661	0.02105	0.10000
Half life	-	12.00000	-	-
Welfare (weighted)	-8.52094	-8.37599	-8.49556	-8.45154
Welfare workers	-5.86691	-5.61742	-5.80711	-5.64146
Welfare entrepreneurs	-19.13709	-19.41025	-19.24937	-19.69184

	Constant τ_0	Constant $\bar{\tau}$
τ_0	-0.12778	0.21661
$\bar{\tau}$	-0.12778	0.21661
Half life	-	-
Welfare (weighted)	-8.78100	-8.55986
Welfare workers	-6.35120	-5.59538
Welfare entrepreneurs	-18.50019	-20.41779

Experiment	Total welfare	Worker welfare	Entrepreneur welfare
Optimal policy	0.00503	0.00751	-0.01356
Optimal flat tax	0.00241	0.00679	-0.02736
Constant τ_0	-0.00896	-0.01442	0.03236
Constant $\bar{\tau}$	-0.00135	0.00818	-0.06203

2 Parameters and functional forms

2.1 Functional forms etc.

- Occupational choice: No
- Workers save: No
- Decreasing returns to scale: Yes
- Productivity process: Ornstein-Uhlenbeck, $d \log(z) = -\nu \log(z)dt + \sigma dW$
- Period utility function:

$$u(c, l) = (1 - \gamma)^{-1} c^{1-\gamma} - \nu(l), \quad \nu(l) = (1 + 1/\chi)^{-1} l^{1+1/\chi}$$

- Production function: $y = F(z, k, n) = zA((k - f_k)^+)^{\alpha}((n - f_n)^+)^{\beta}$
- Tax schedule: $\tau_l(t) = \bar{\tau}_l + e^{-\gamma t}(\tau_{l,0} - \bar{\tau}_l)$

2.2 Parameter values

Pareto weight workers		0.800
Population share of workers	$popshare$	0.667
Total population	$popmass$	1.000
Discount rate entrepreneurs	ρ_e	0.050
Discount rate workers	ρ_w	0.030
Relative risk aversion	γ	1.000
Inverse Frisch elasticity	φ	1.000
Depreciation rate	δ	0.000
Death rate	θ	0.000
Fixed cost capital	f_k	0.000
Fixed cost labor	f_n	0.000
Financial constraint parameter	λ	2.000
Common TFP parameter	A	1.000
Capital share	α	0.297
Labor share	β	0.603
Returns to scale	$\alpha + \beta$	0.900
Interest rate	r^*	0.030
Effect of productivity on effective labor supply	η	0.000
Productivity drift parameter	ν	0.163
Productivity yearly autocorrelation	$e^{-\nu}$	0.850
Productivity standard deviation parameter	σ	0.300
Productivity mean	\bar{z}	1.148
Poisson arrival rate		0.100
Parameter of Pareto distribution of Poisson shocks		1.100
Contraction of initial distribution	χ	0.100

2.3 Iteration parameters

Number of grid points assets	I	200.000
Number of grid points productivity	J	30.000
Number of grid points time	N	150.000
Number of time periods	T	150.000
Max assets	a_{max}	350.000
Mean wealth relative to steady state		0.100
Range of initial tax rate tested	τ_0	[-0.150,-0.100]
Range of final tax rate tested	$\bar{\tau}$	[0.200,0.250]

3 Figures

Optimal steady state tax rate = 0.021

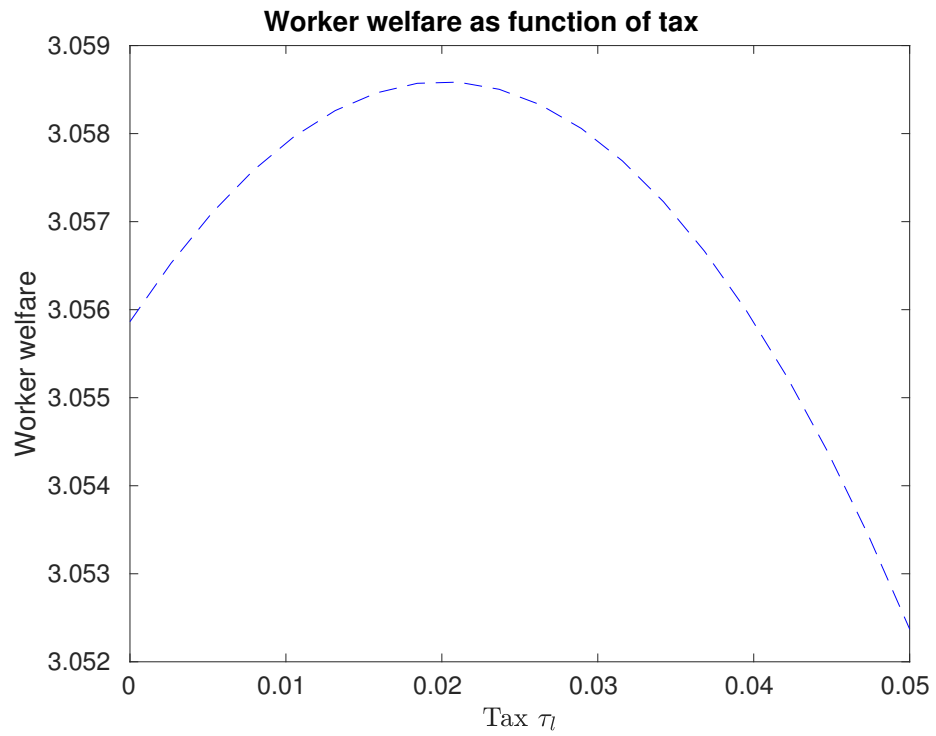


Figure 1

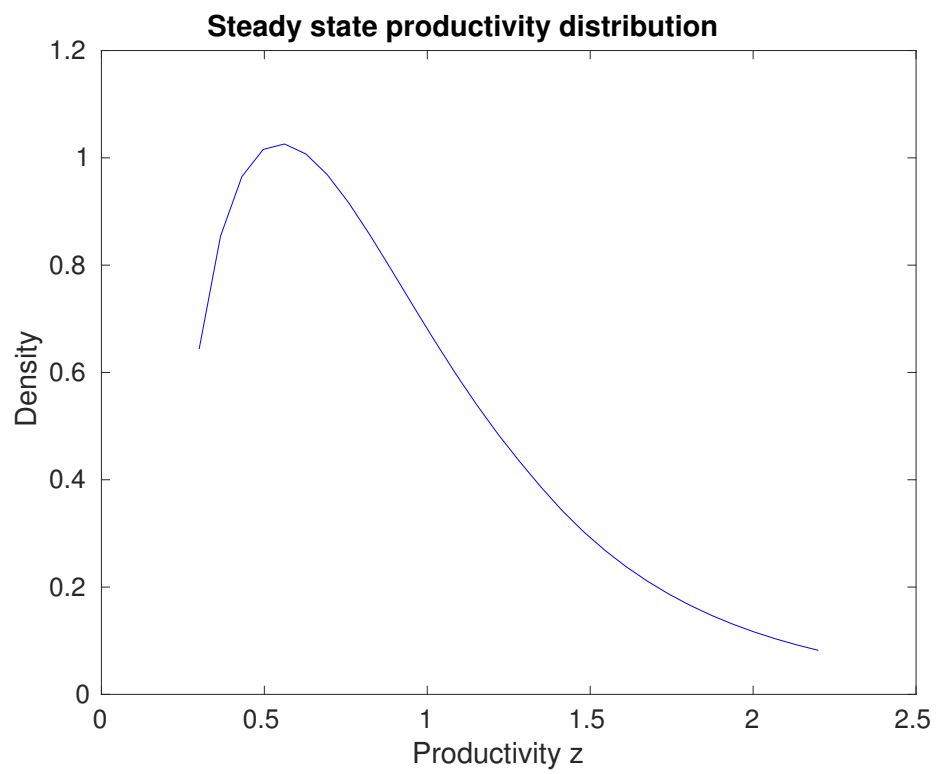


Figure 2

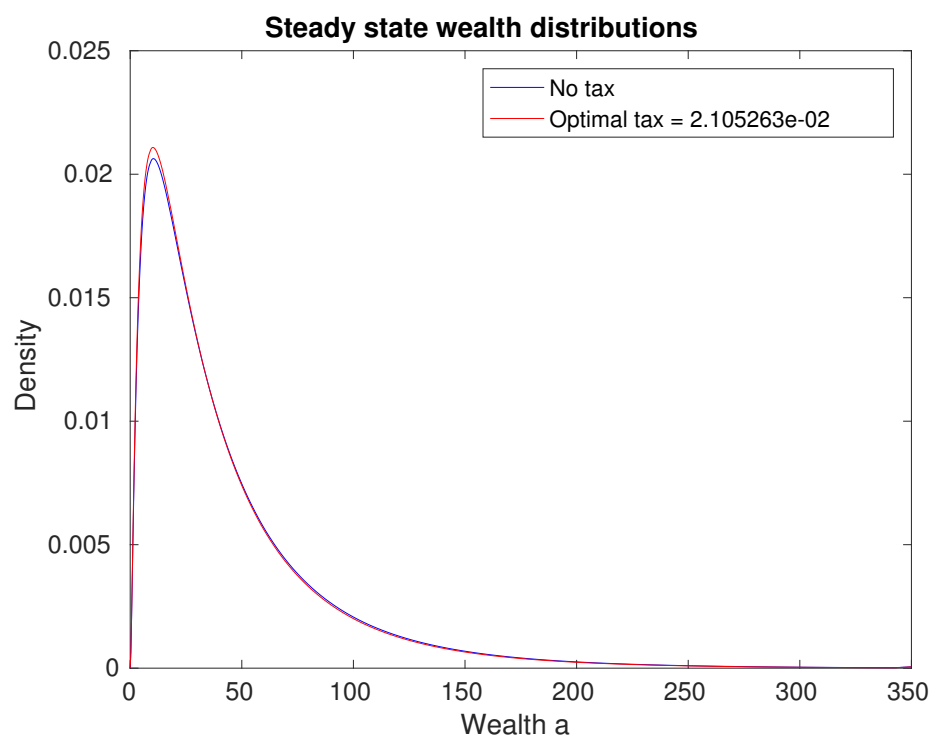


Figure 3

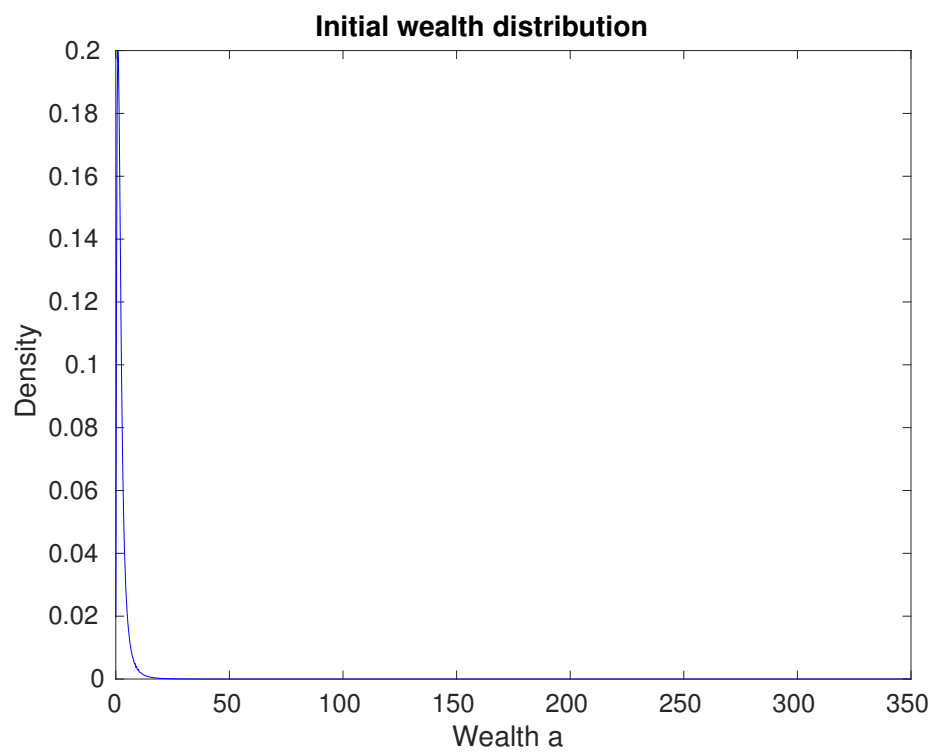


Figure 4

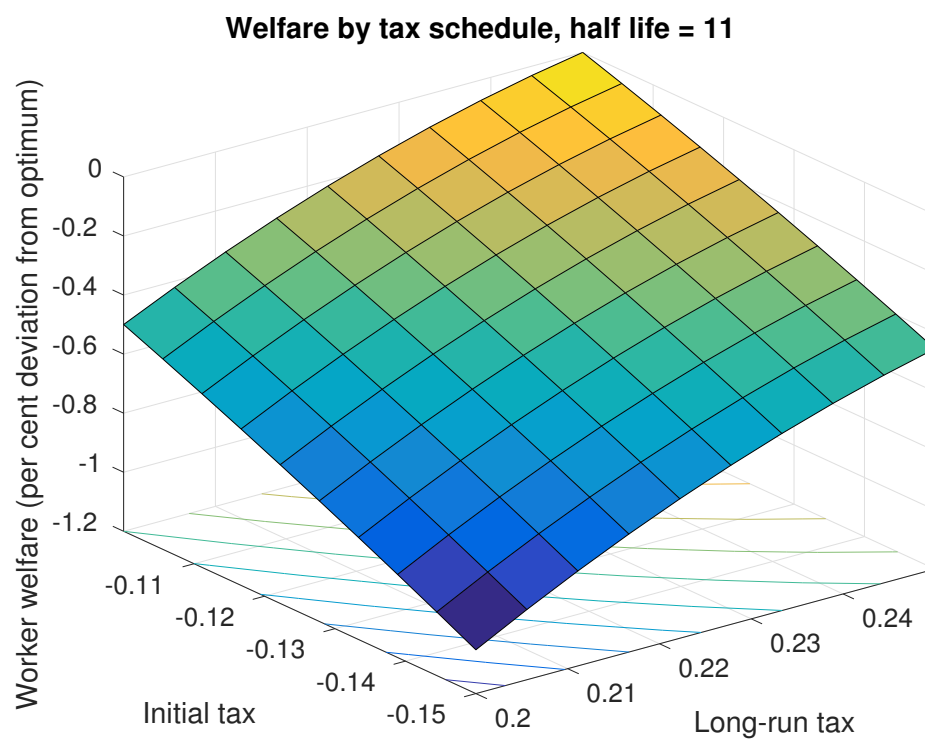


Figure 5

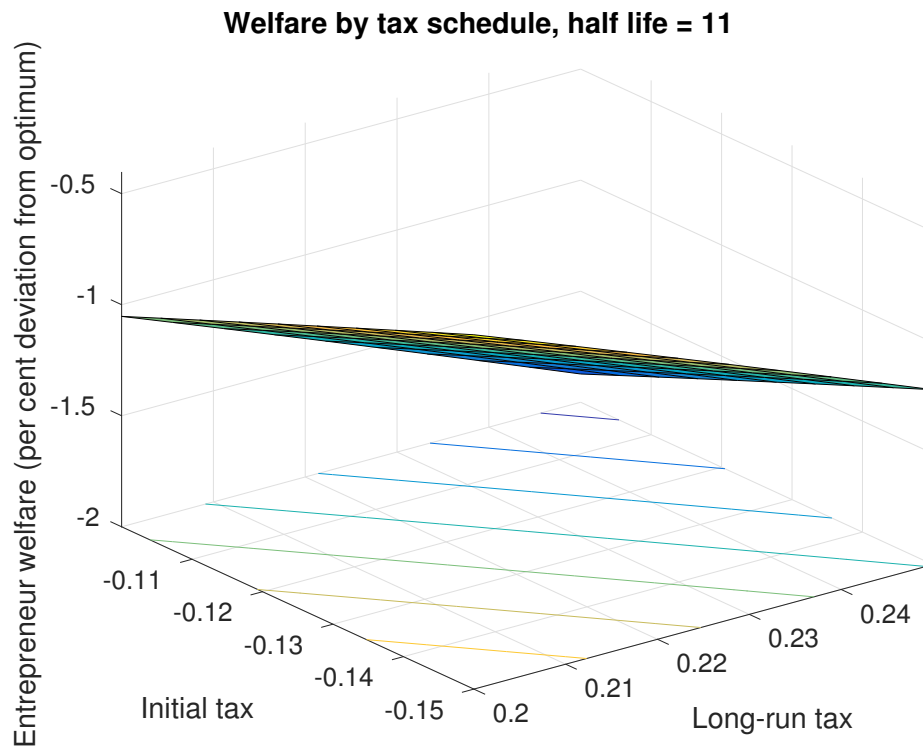


Figure 6

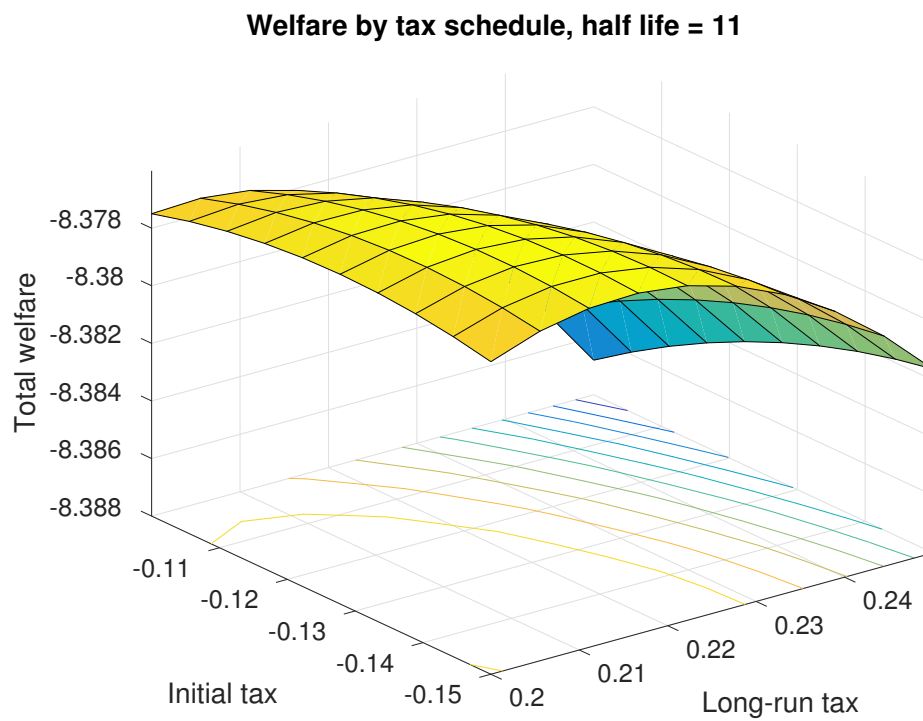


Figure 7

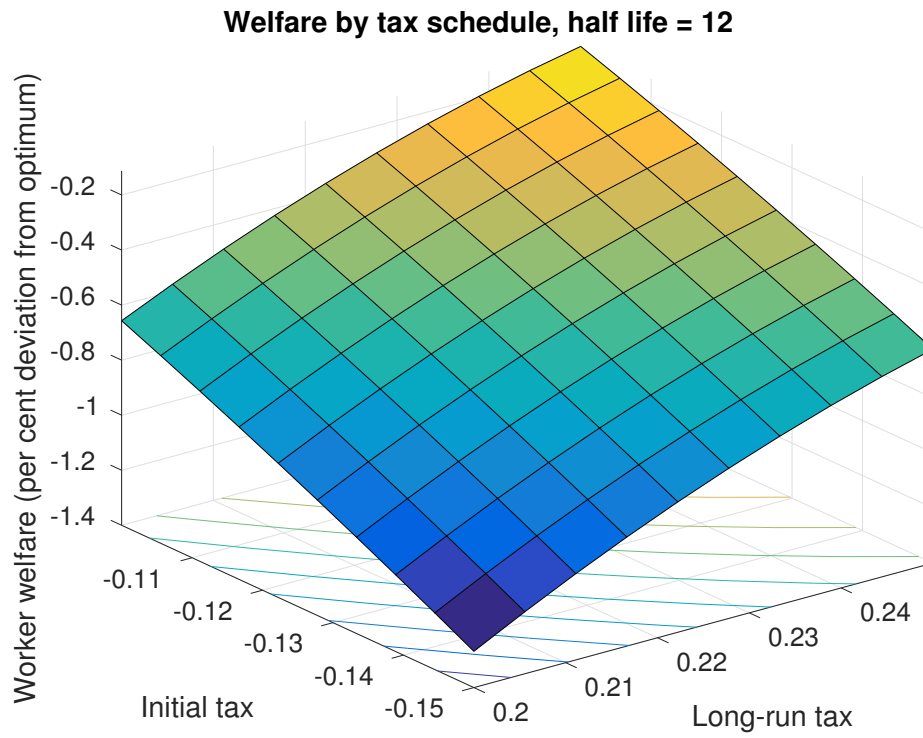


Figure 8

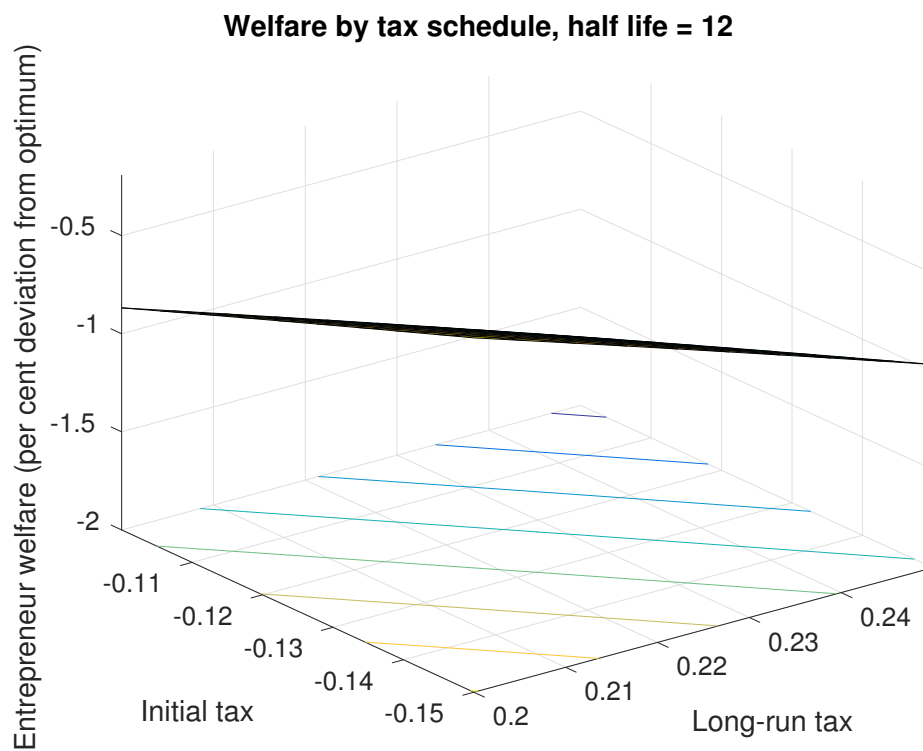


Figure 9

Welfare by tax schedule, half life = 12

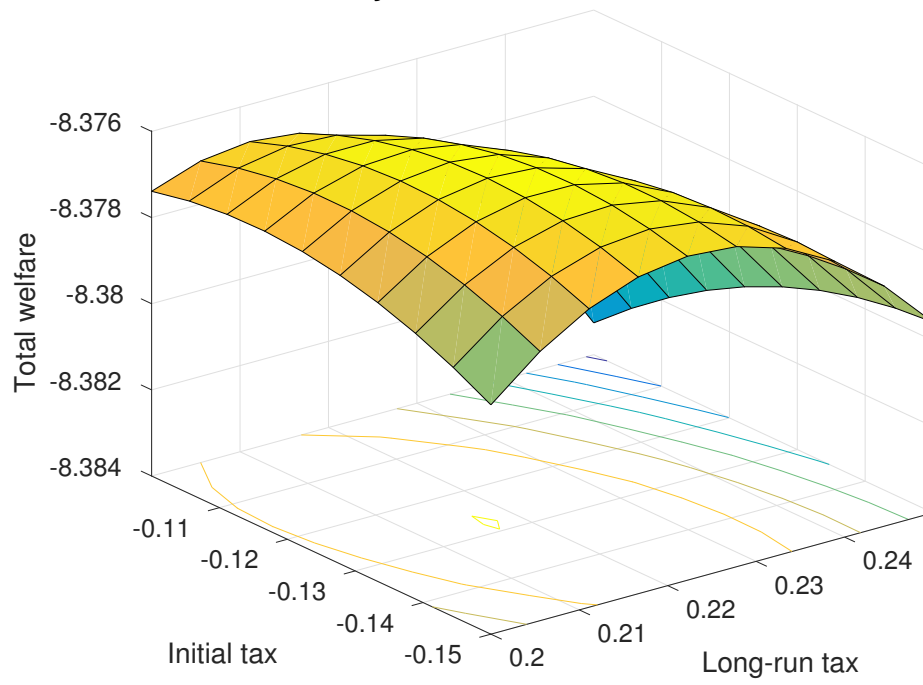


Figure 10

Welfare by tax schedule, half life = 13

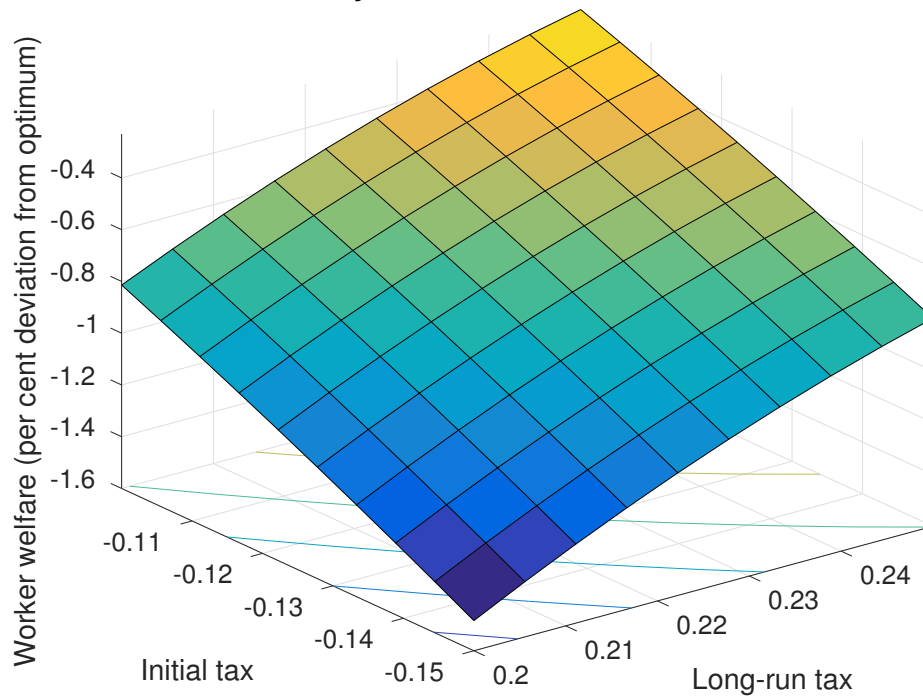


Figure 11

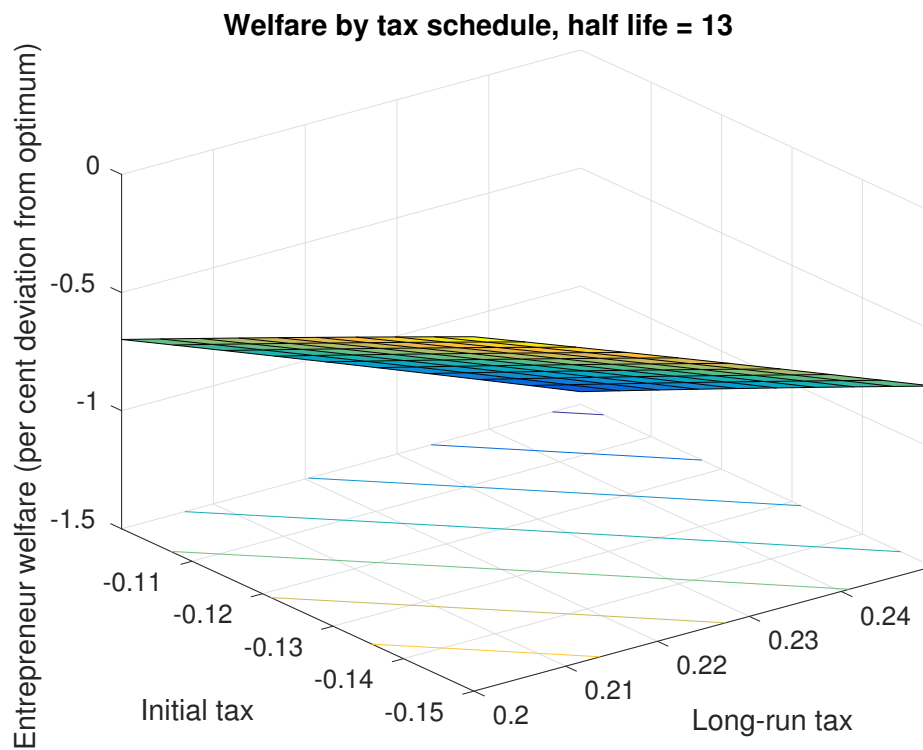


Figure 12

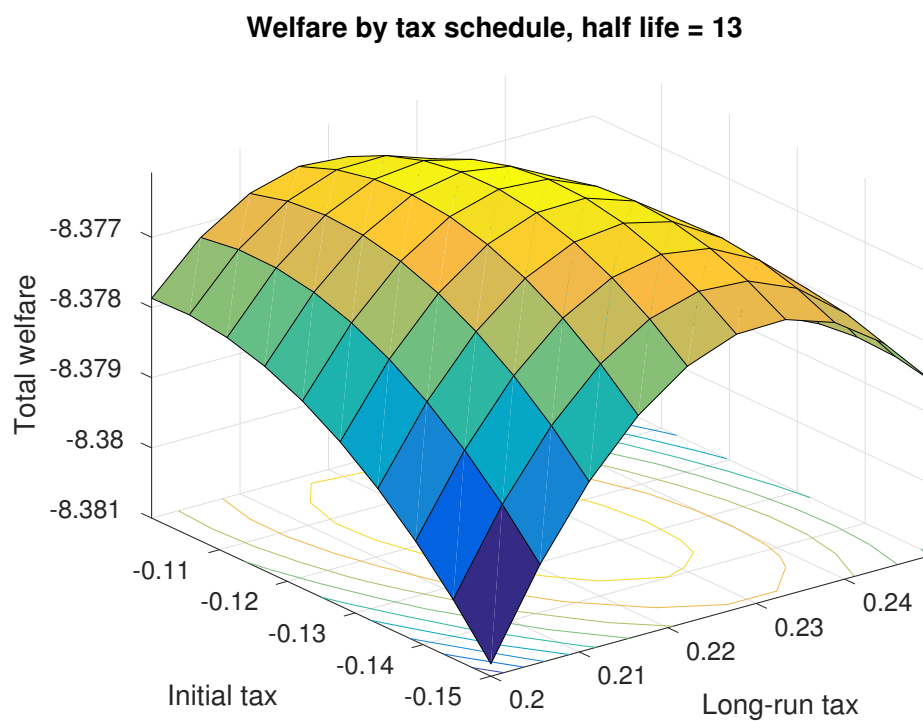


Figure 13

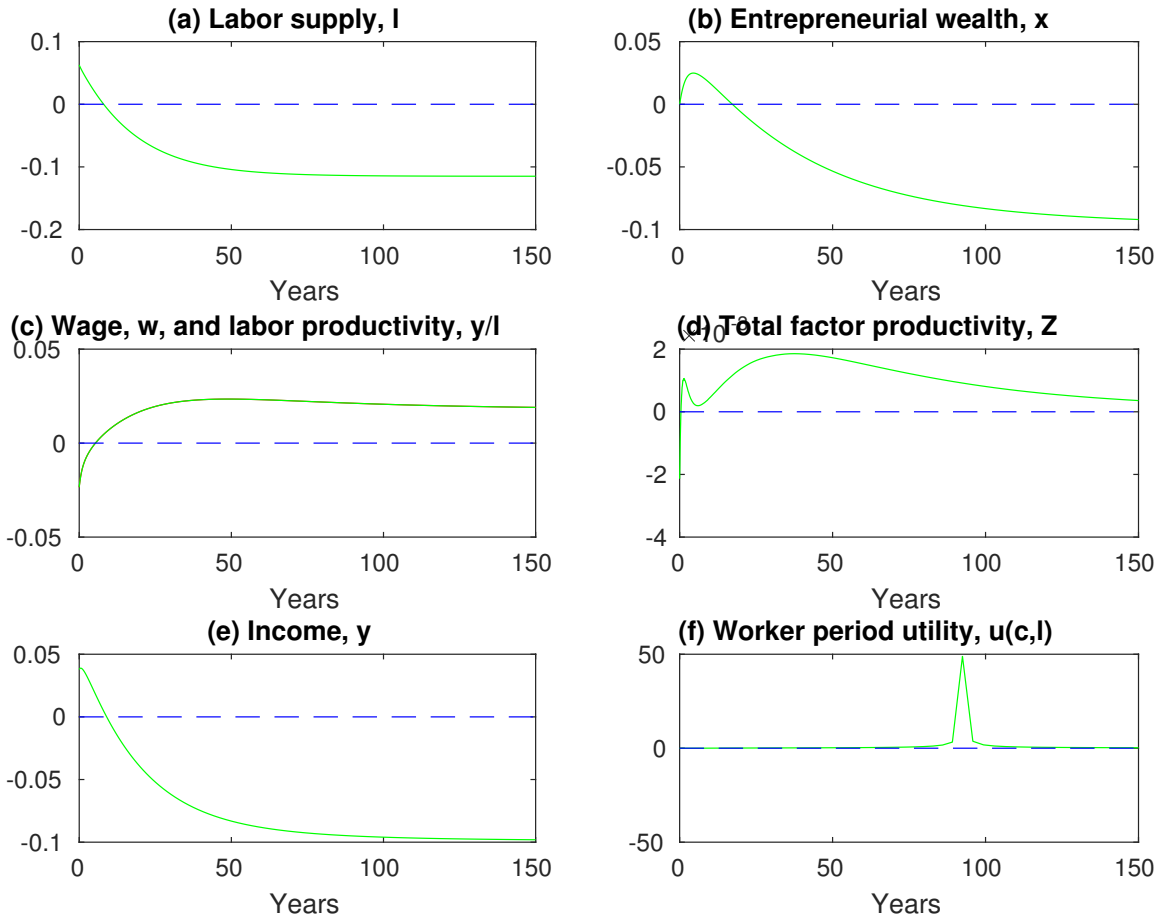


Figure 14 – Proportional deviations of optimal tax equilibrium from the laissez-faire equilibrium

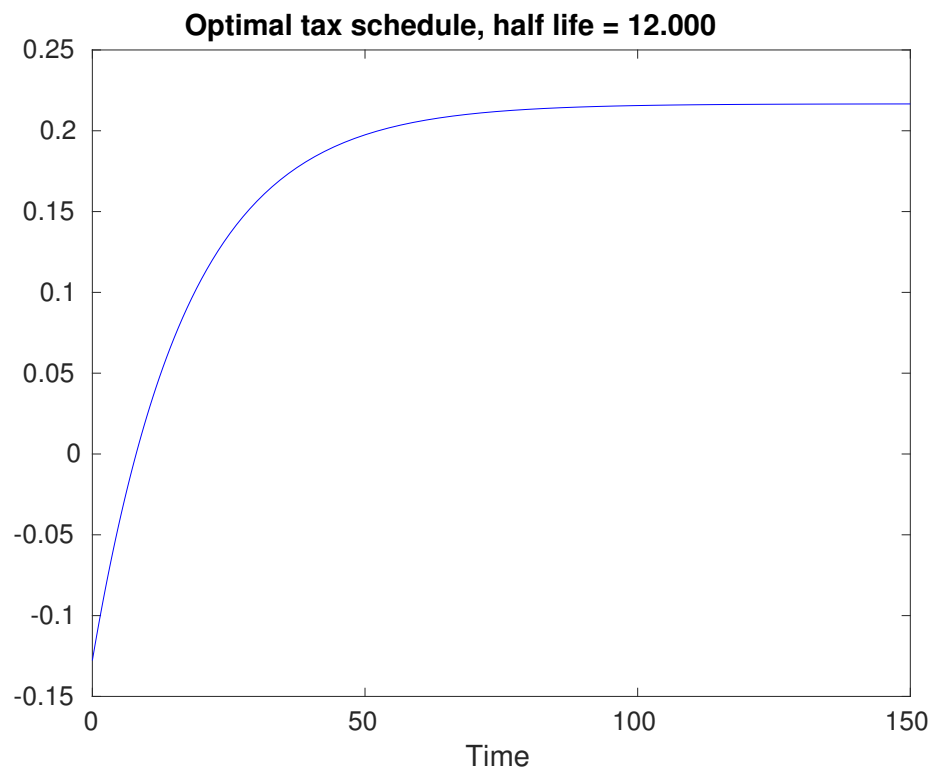


Figure 15

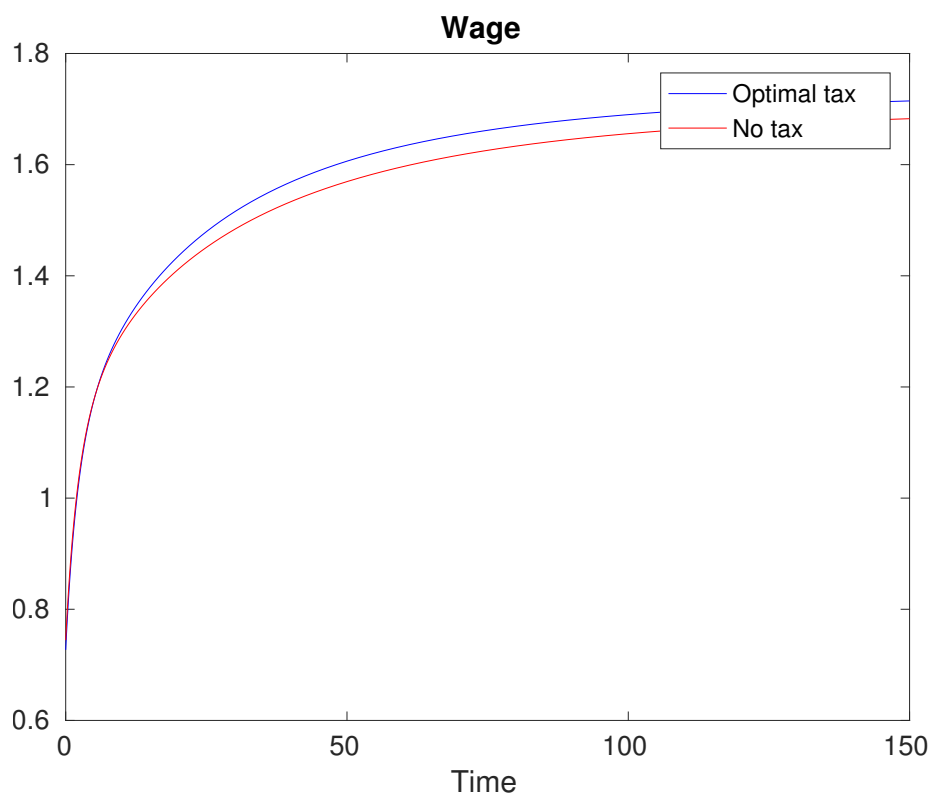


Figure 16

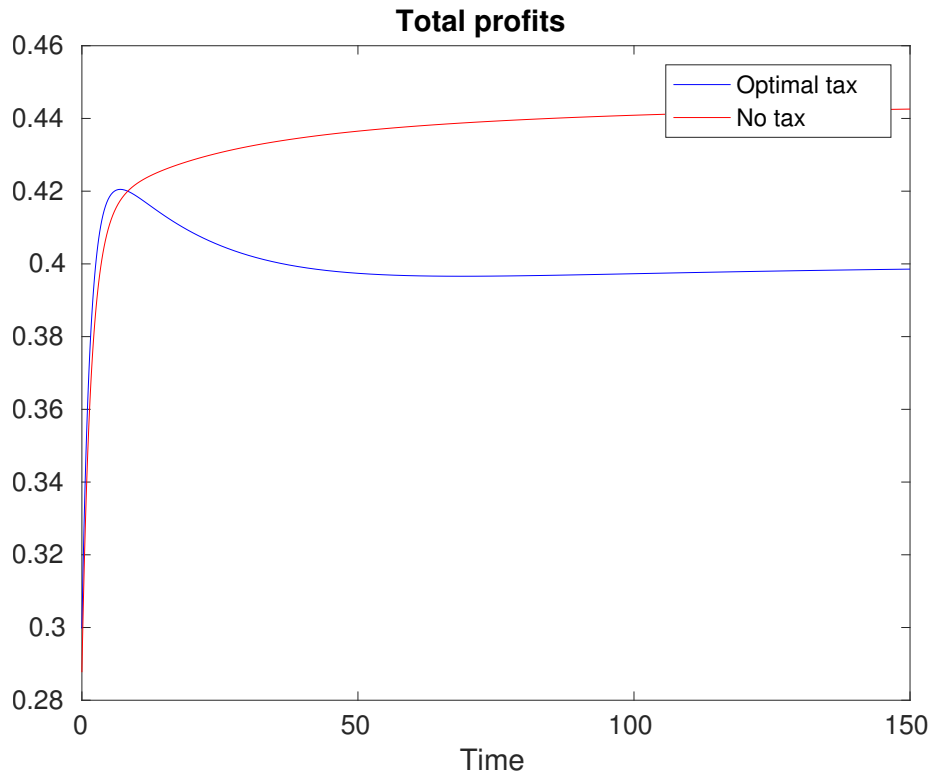


Figure 17

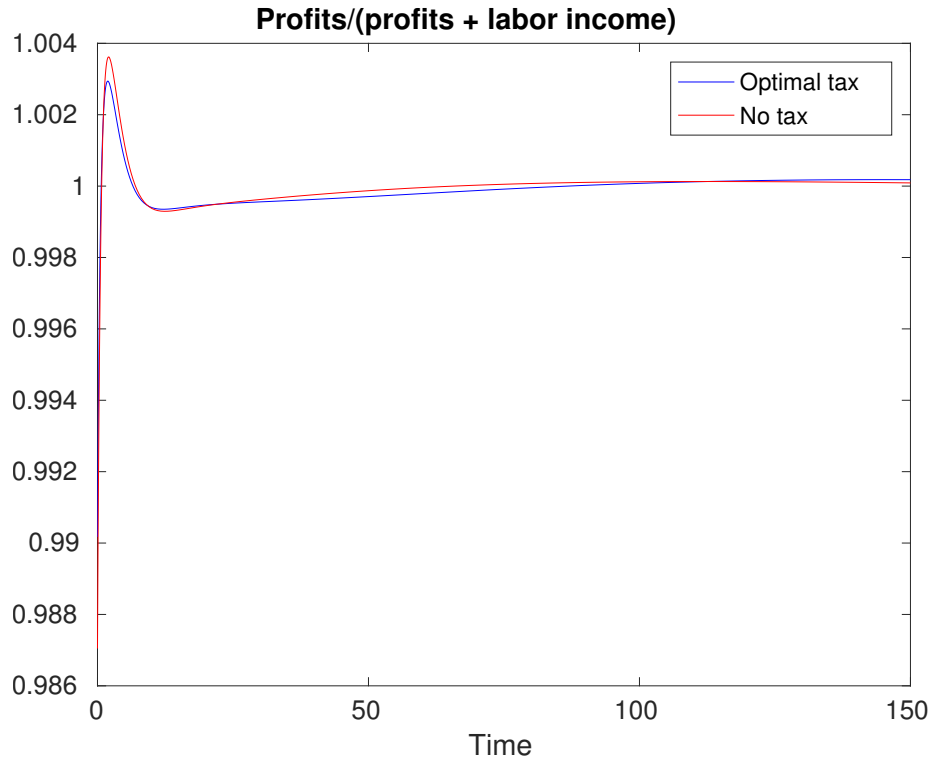


Figure 18

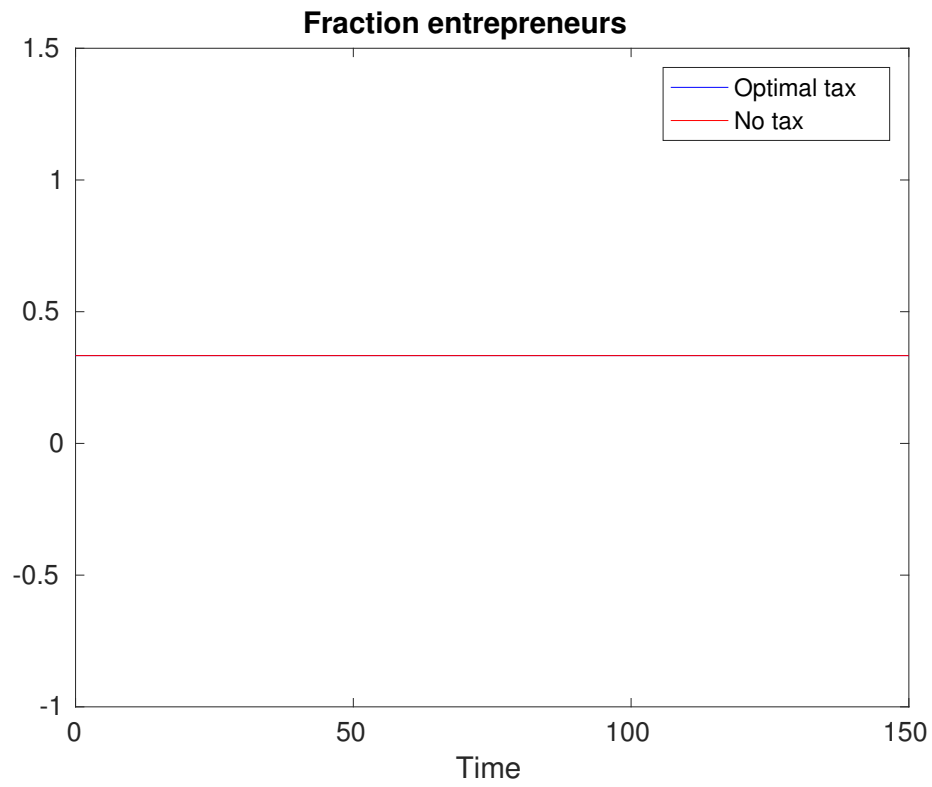


Figure 19

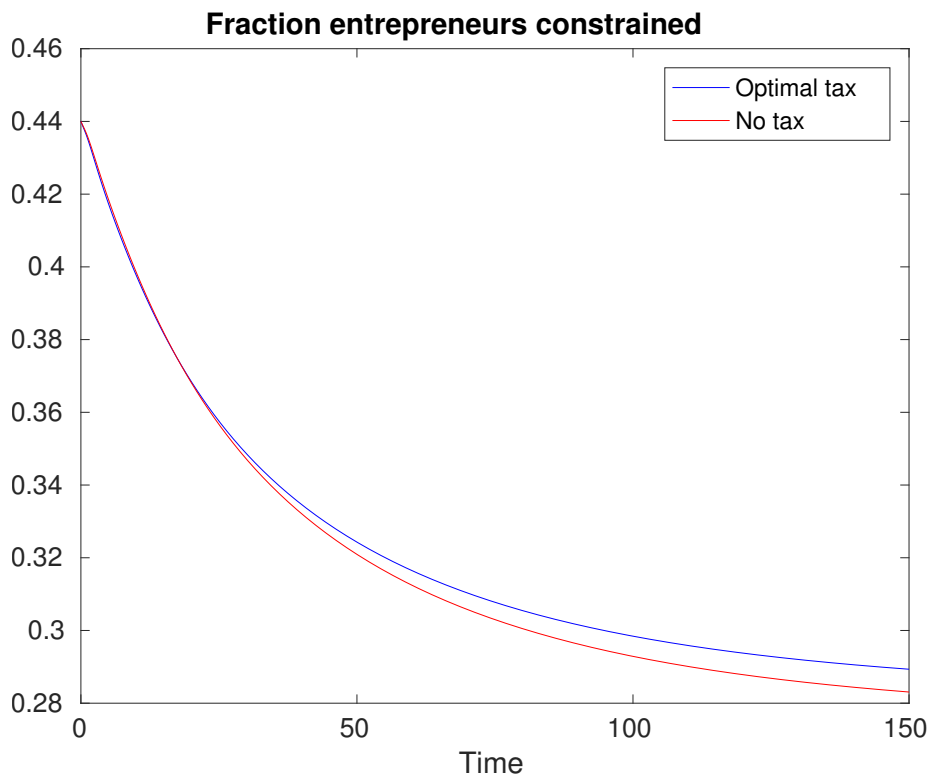


Figure 20

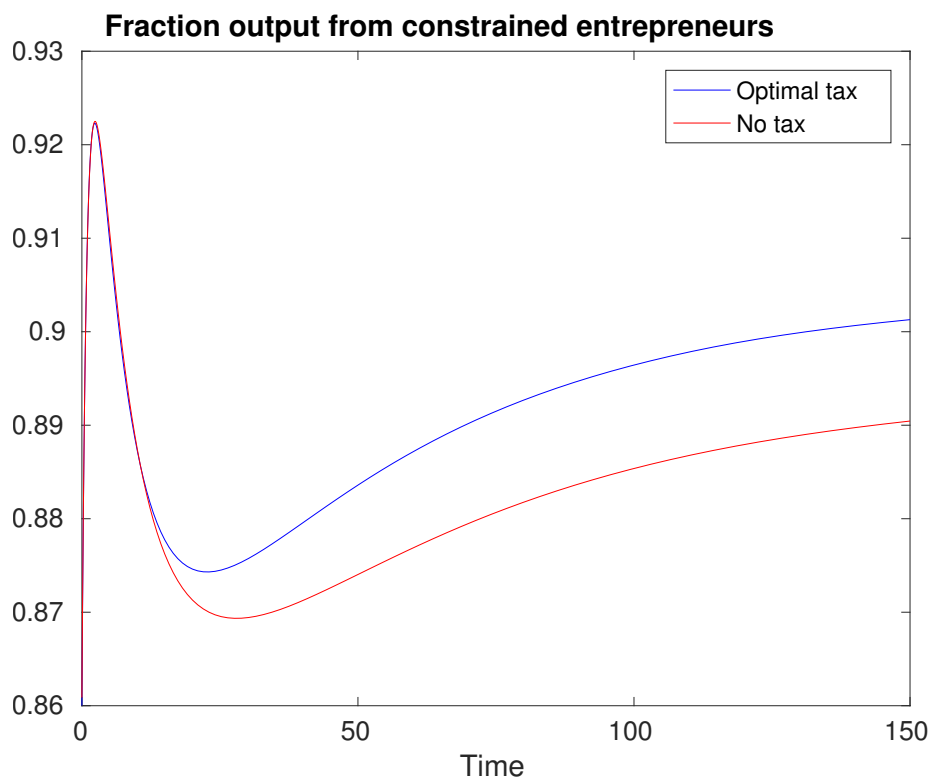


Figure 21

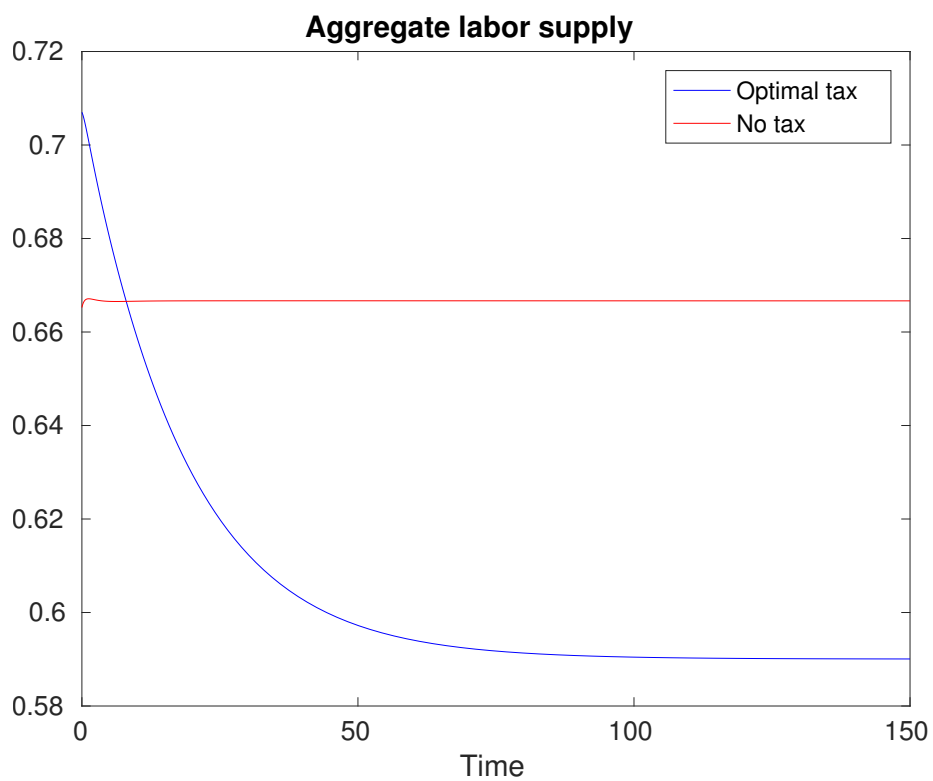


Figure 22

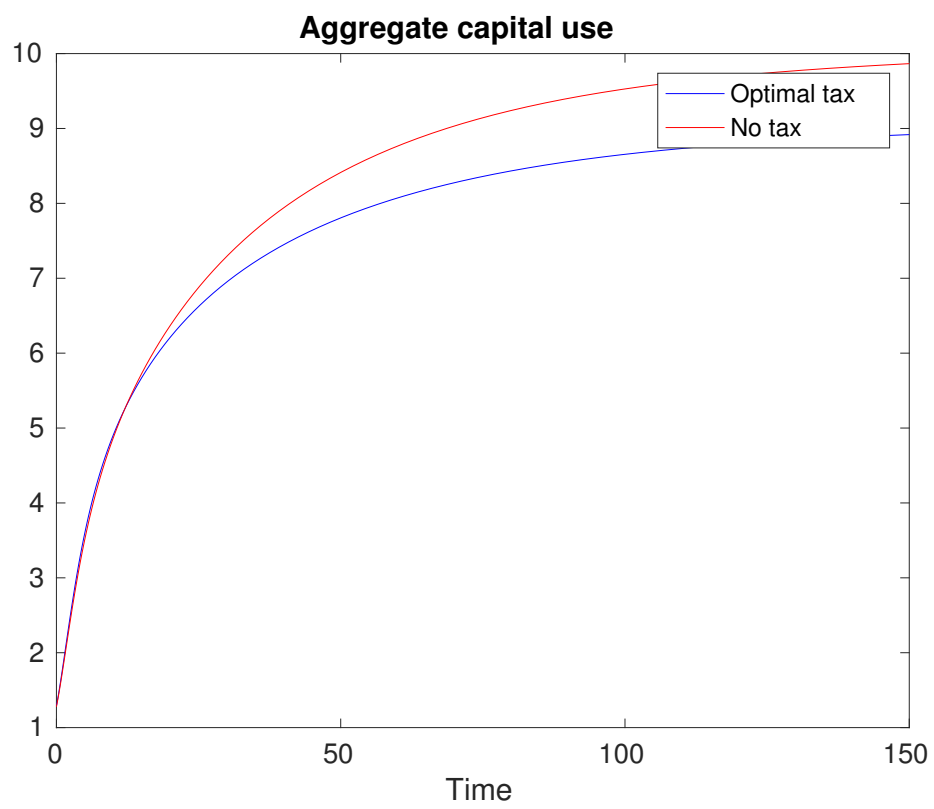


Figure 23

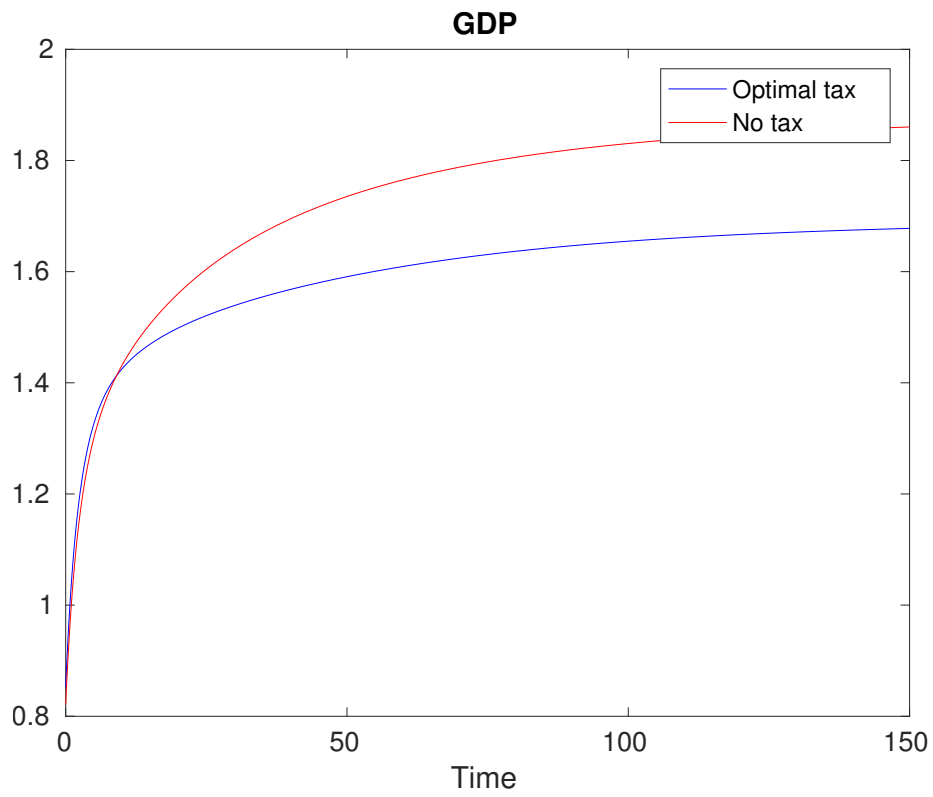


Figure 24

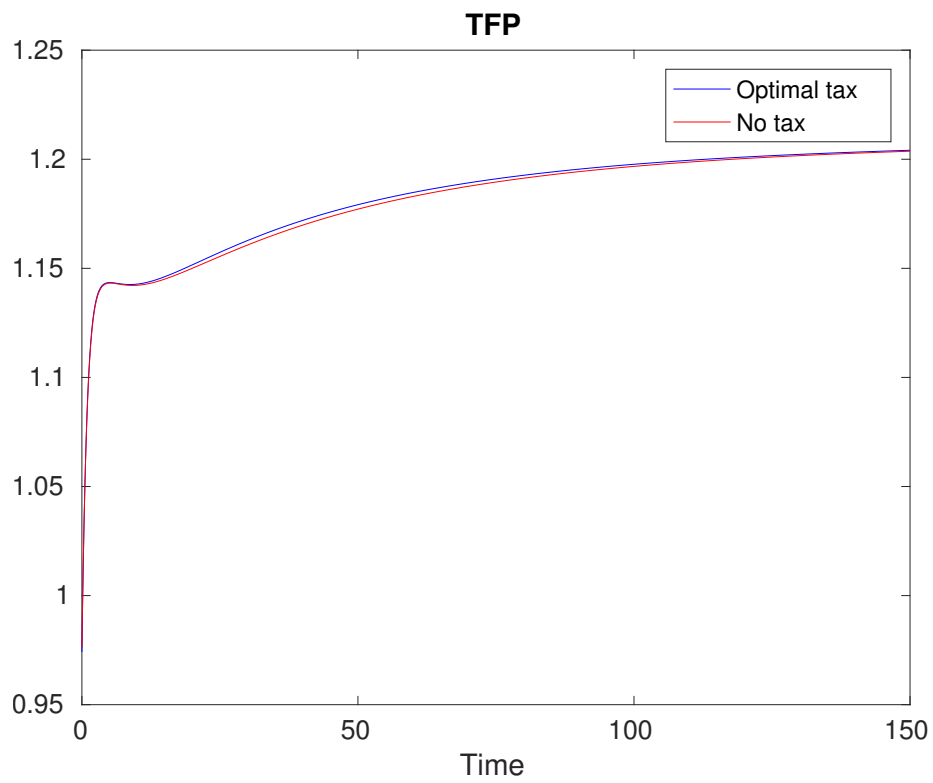


Figure 25

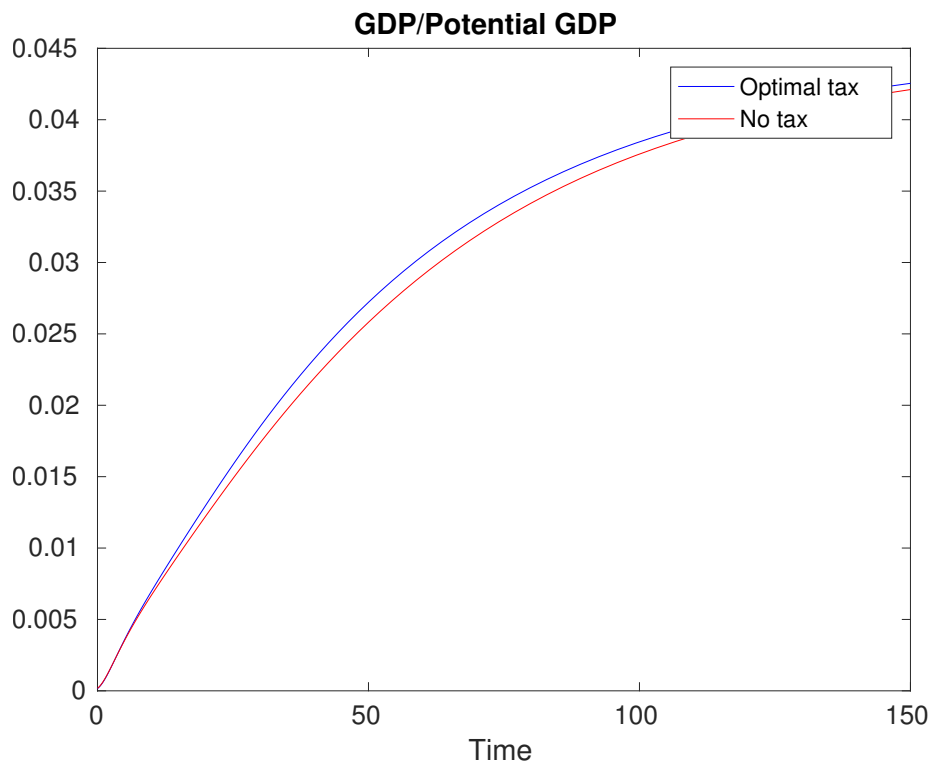


Figure 26

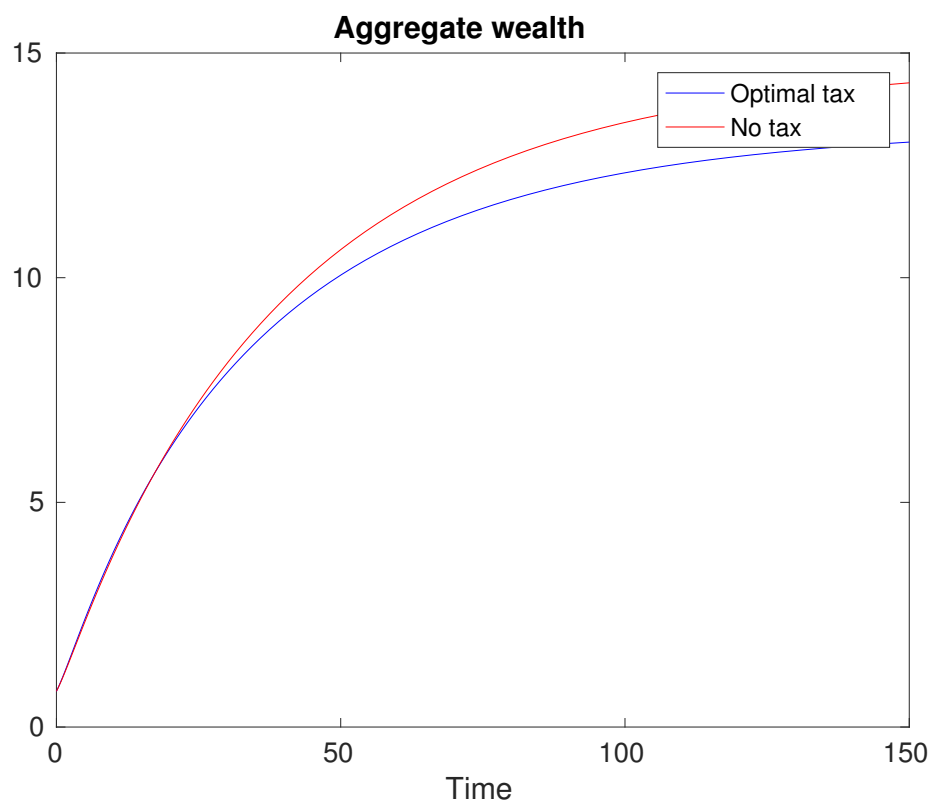


Figure 27

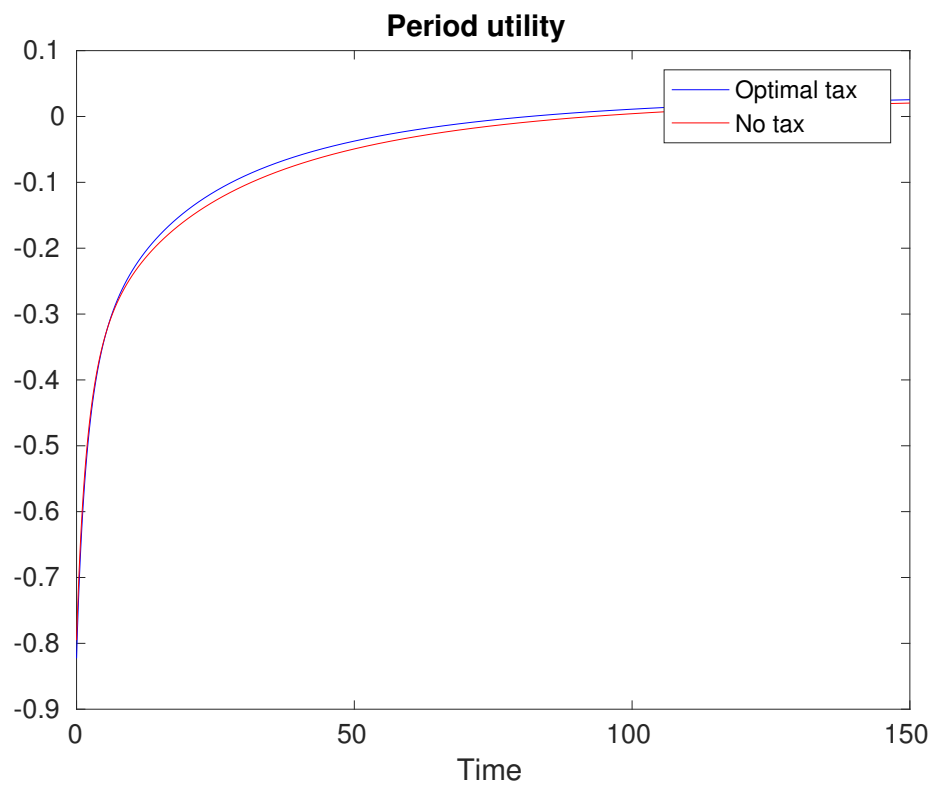


Figure 28



Figure 29