Network Simulation

Econ Research Project

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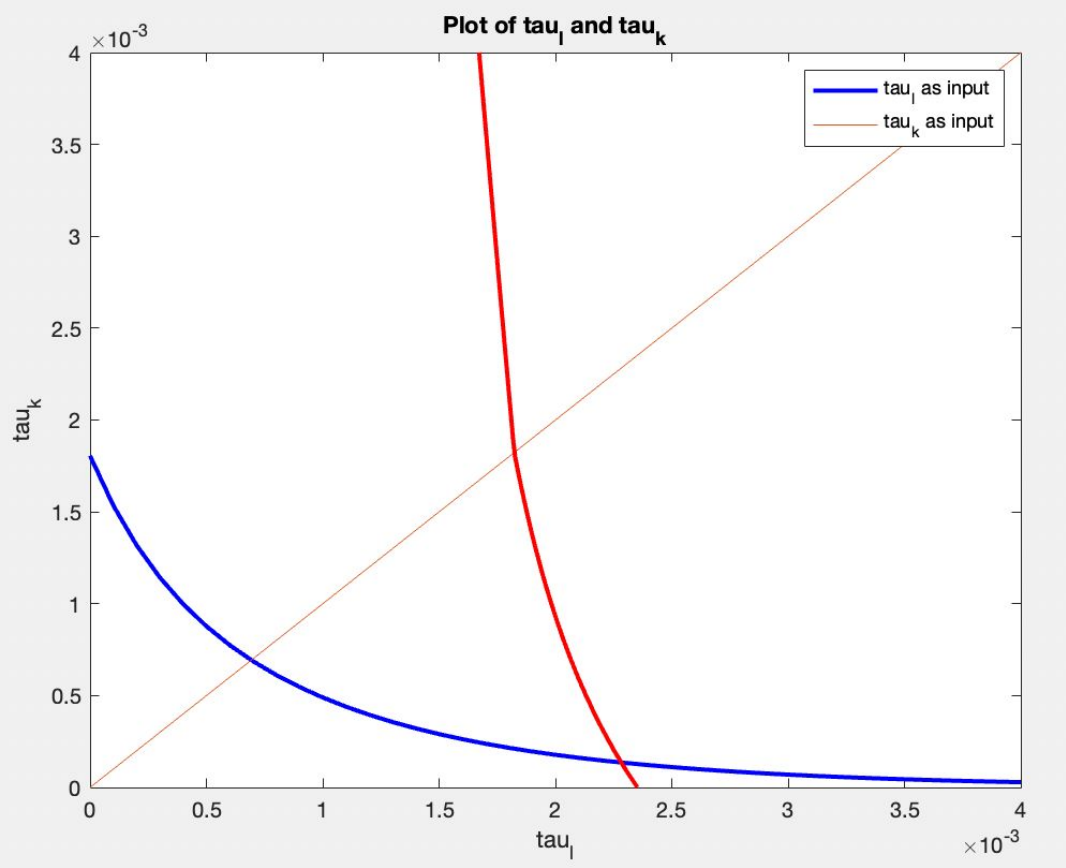
Parameter Setting

x=2, y = (x-c)/r=1, c=1, r=1, p_0=0.5

c/x (myopic)=1/2

c/(x+y) (single-agent) = 1/3

K=100:
(tau_l,tau_k)=(0.00228,0.00014)



Indifference condition for core(tau_l as input):

tau_l = 0:0.0001:0.004;

tau_k =

0.0018 0.0015 0.0013 0.0011 0.0010 0.0009
0.0008 0.0007 0.0006 0.0005 0.0005 0.0004
0.0004 0.0004 0.0003 0.0003 0.0003 0.0002
0.0002 0.0002 0.0002 0.0002 0.0001 0.0001
0.0001 0.0001 0.0001 0.0001 0.0001 0.0001
0.0001 0.0001 0.0001 0.0001 0.0000 …

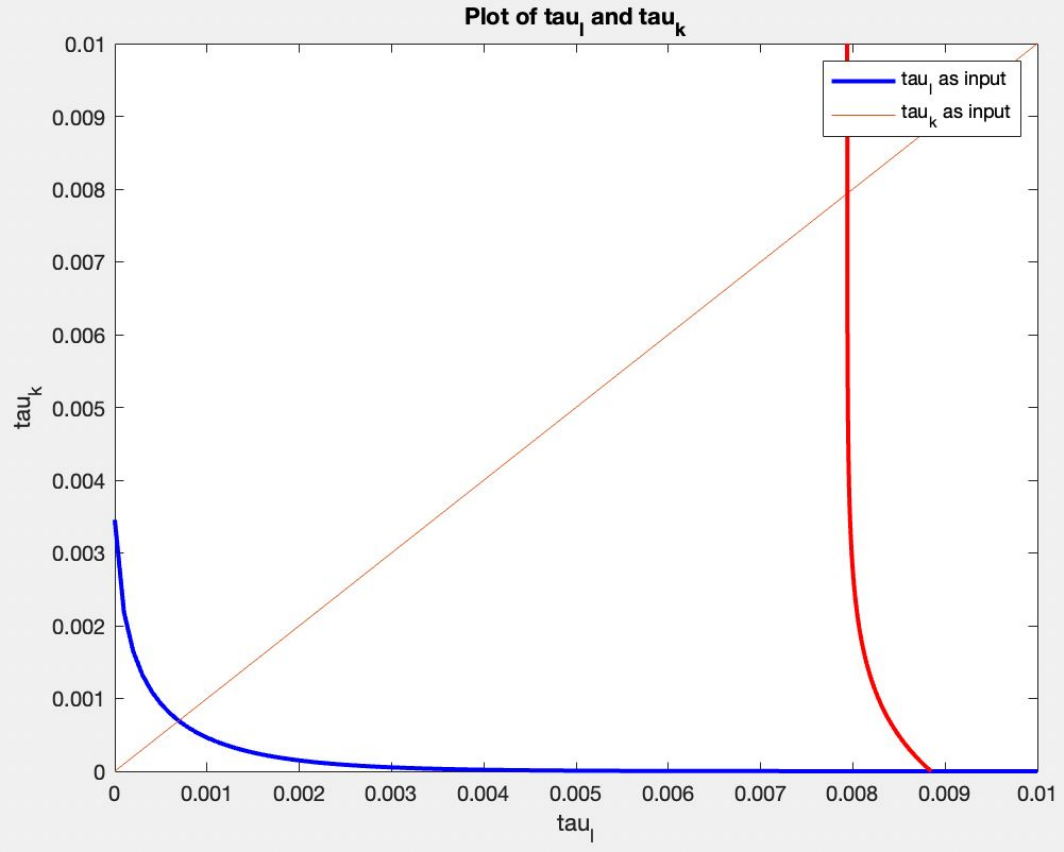
Indifference condition for peripheral(tau_k as input):

tau_k = 0:0.0001:0.004;

tau_l =

0.0024 0.0023 0.0023 0.0022 0.0022 0.0021
0.0021 0.0021 0.0020 0.0020 0.0020 0.0020
0.0019 0.0019 0.0019 0.0019 0.0019 0.0018
0.0018 0.0018 …

K=10:
(tau_l,tau_k)=(0.00885,0)



Indifference condition for core(tau_l as input):

tau_l = 0:0.0001:0.01

tau_k=

0.0035 0.0022 0.0016 0.0013 0.0011
0.0009 0.0008 0.0007 0.0006 0.0005
0.0005 0.0004 0.0004 0.0003 0.0003
0.0003 0.0002 0.0002 0.0002 0.0002
0.0001 0.0001 0.0001 0.0001 0.0001
0.0001 0.0001 0.0001 0.0001 0.0001
0.0001 0.0000 …

Indifference condition for peripheral(tau_k as input):

tau_k= 0:0.0001:0.01

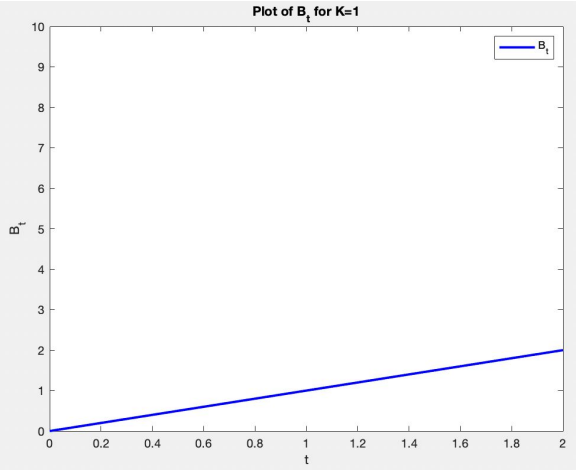
tau_l=

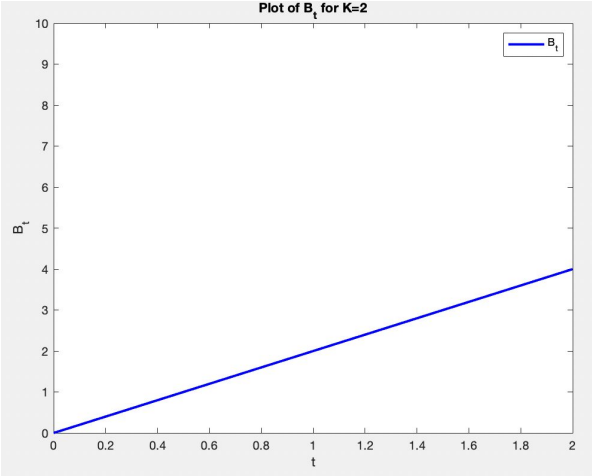
0.0088 0.0088 0.0087 0.0086 0.0086
0.0085 0.0084 0.0084 0.0084 0.0083
0.0083 0.0082 0.0082 0.0082 0.0082
0.0081 0.0081 0.0081 0.0081 0.0081
0.0081 0.0081 0.0080 0.0080 0.0080…

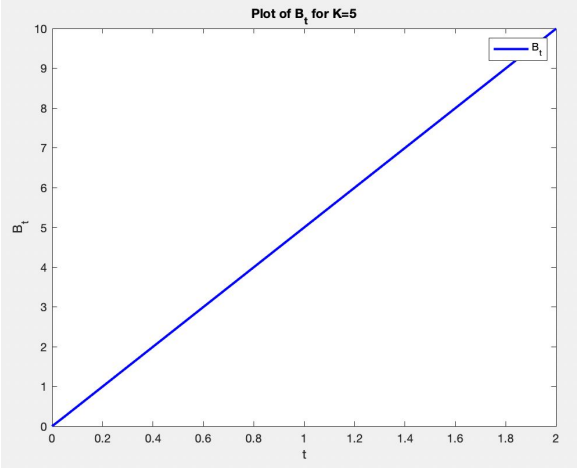
Cutoff Time with Differernt K

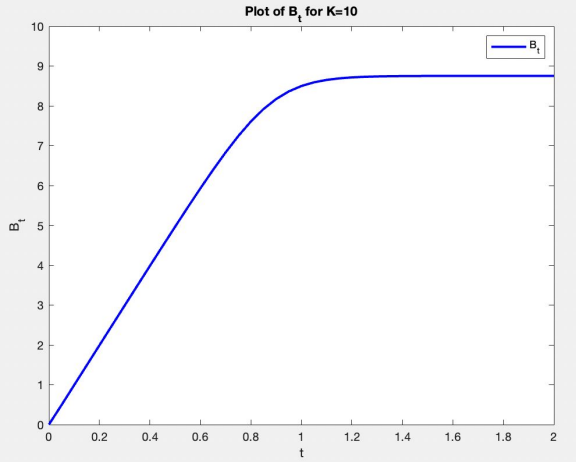
K	1	2	5	10	15	20	25	30	40	70	100
tau_k	0	0	0	0	0.00001	0.00002	0.00003	0.00004	0.00006	0.00010	0.00014
tau_l	0.20323	0.09393	0.02653	0.00885	0.00511	0.00404	0.00356	0.00328	0.00295	0.00250	0.00228

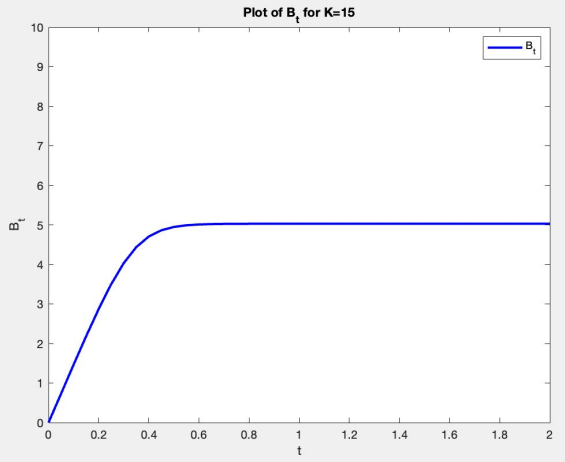
Graph of B_t: K=1,2,5,10



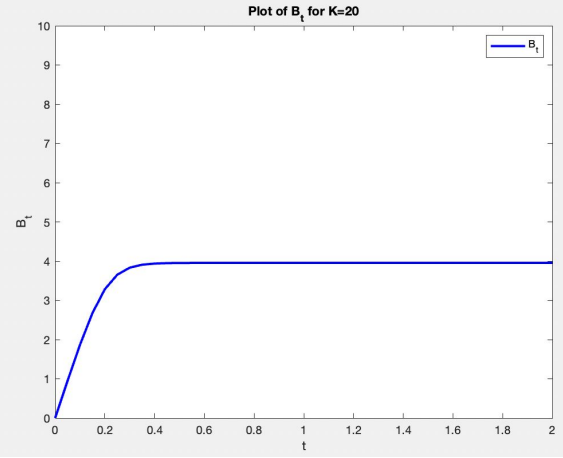


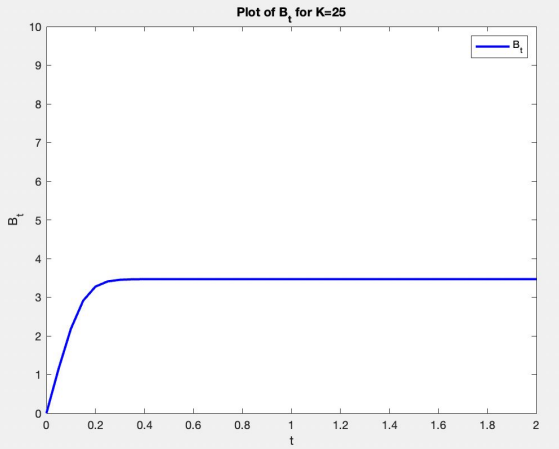


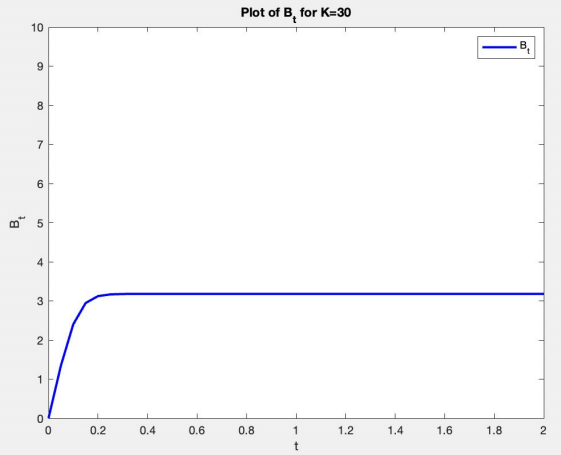


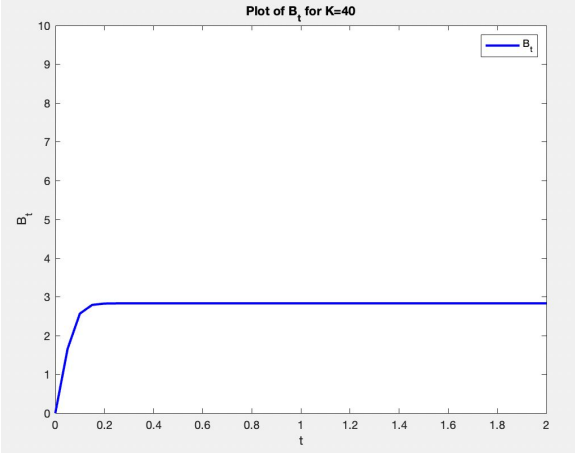


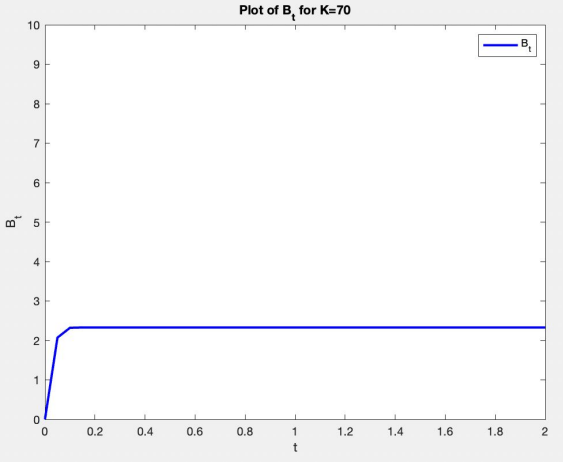
Graph of B_t: K=20,25,30,40,70,100

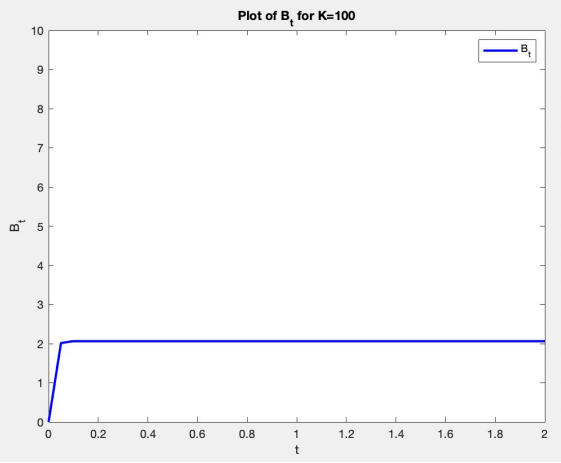






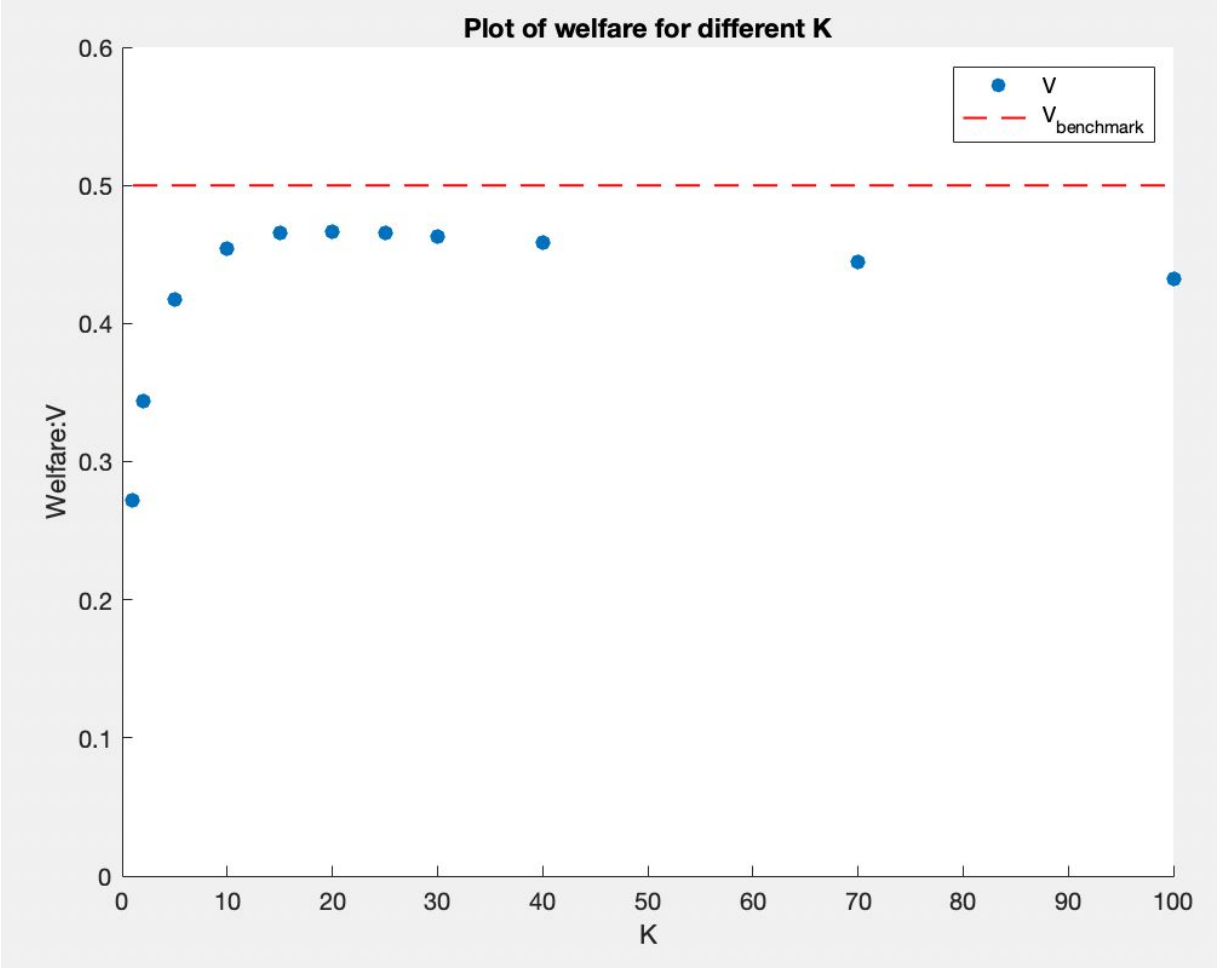




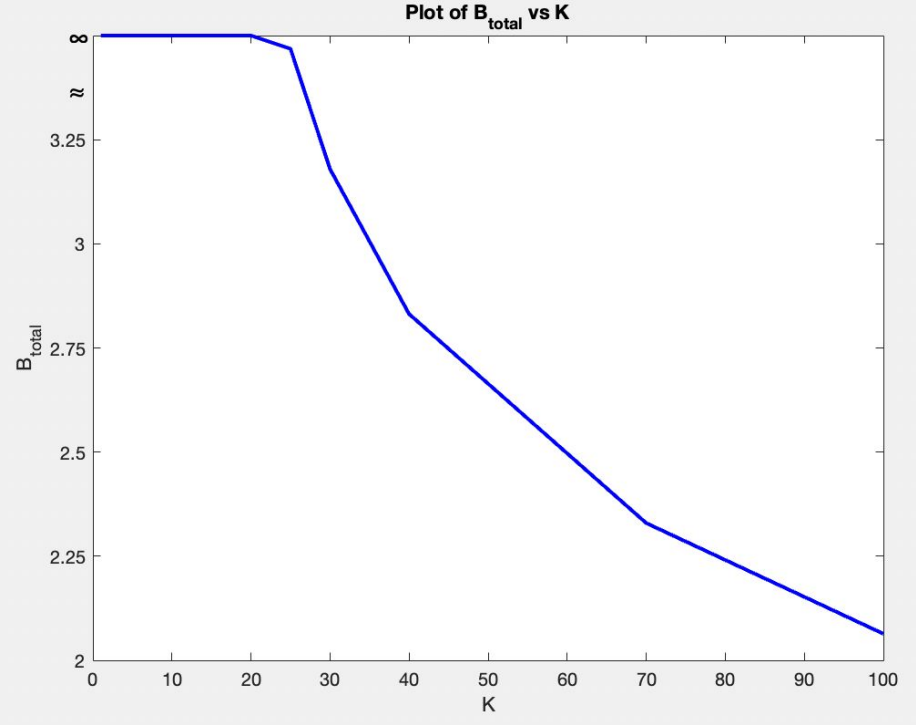


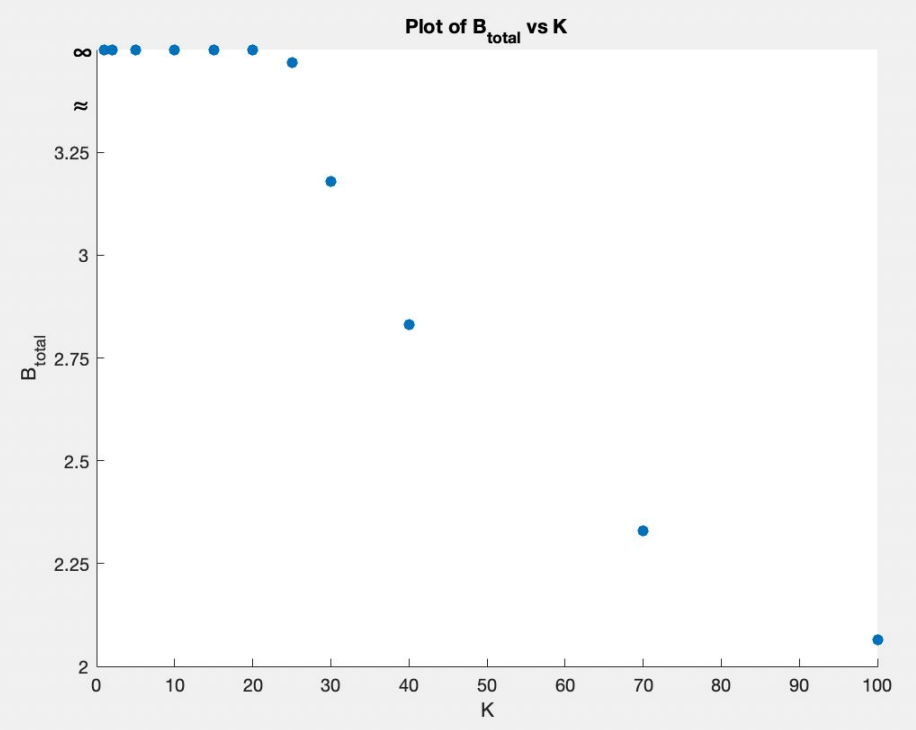
Graph Welfare

- K=1, 2, 5, 10, 15, 20, 25, 30, 40, 70, 100
- Welfare Benchmark= p_o(x+y)-c=0.5

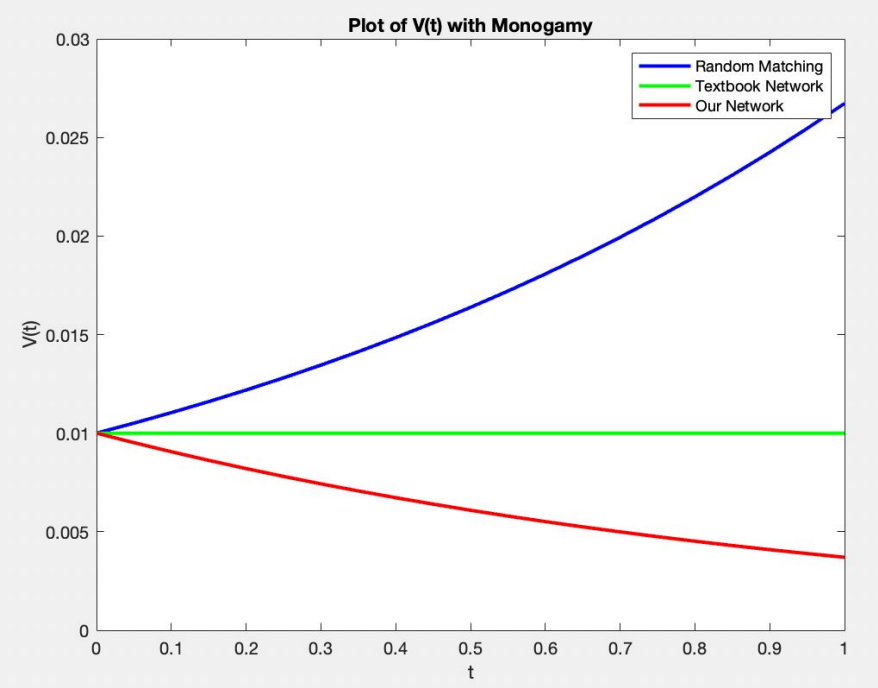


Graph B_total vs K

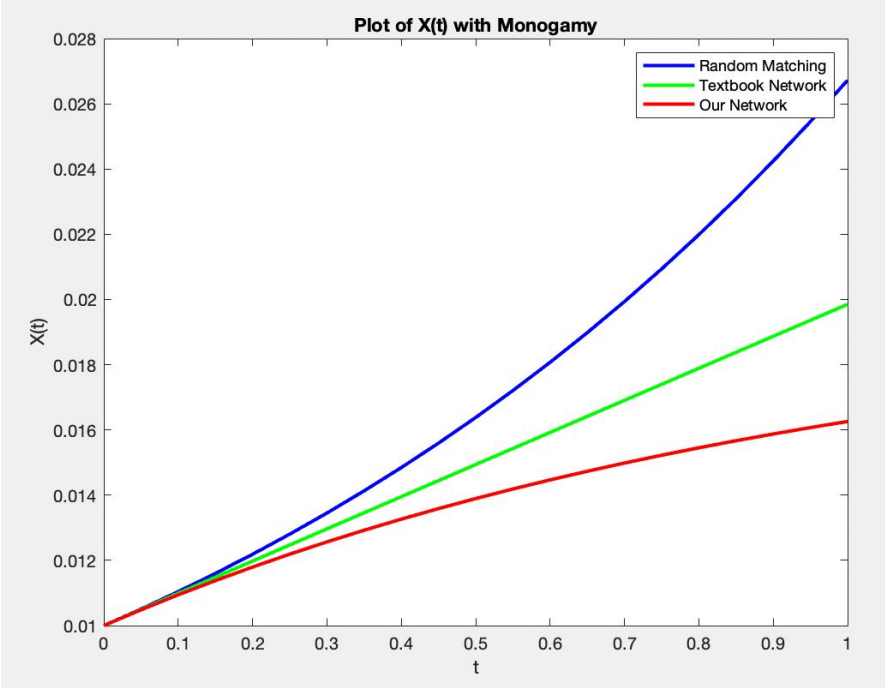




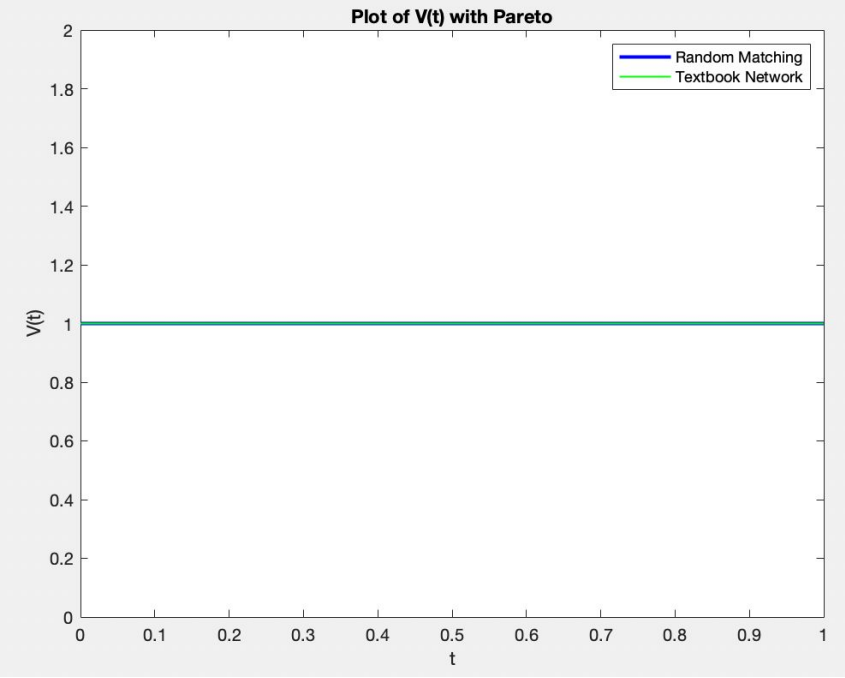
V(t)+Monogamy



X(t)+Monogamy



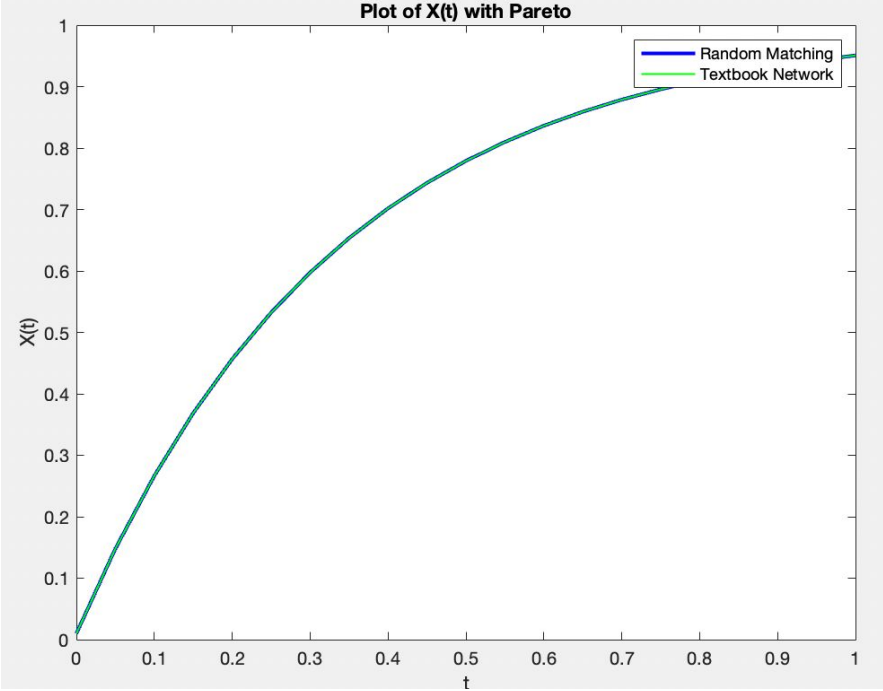
V(t)+Pareto



Not sure how to plot V(t) for our network

$$\text{so } x(t) = 1 - (1-\epsilon)\exp(-t)$$

X(t)+Pareto

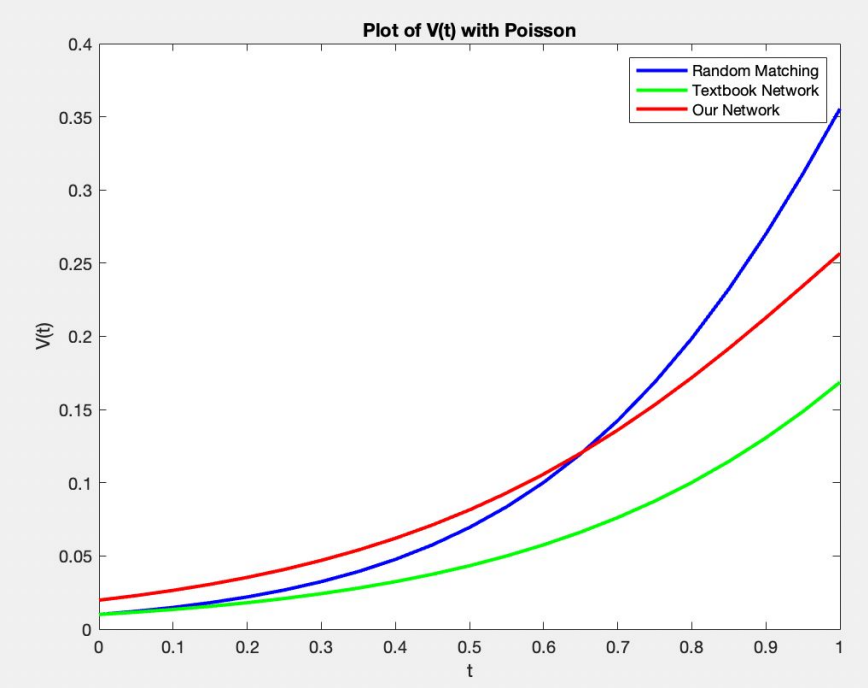


$d = 3$ for Pareto.

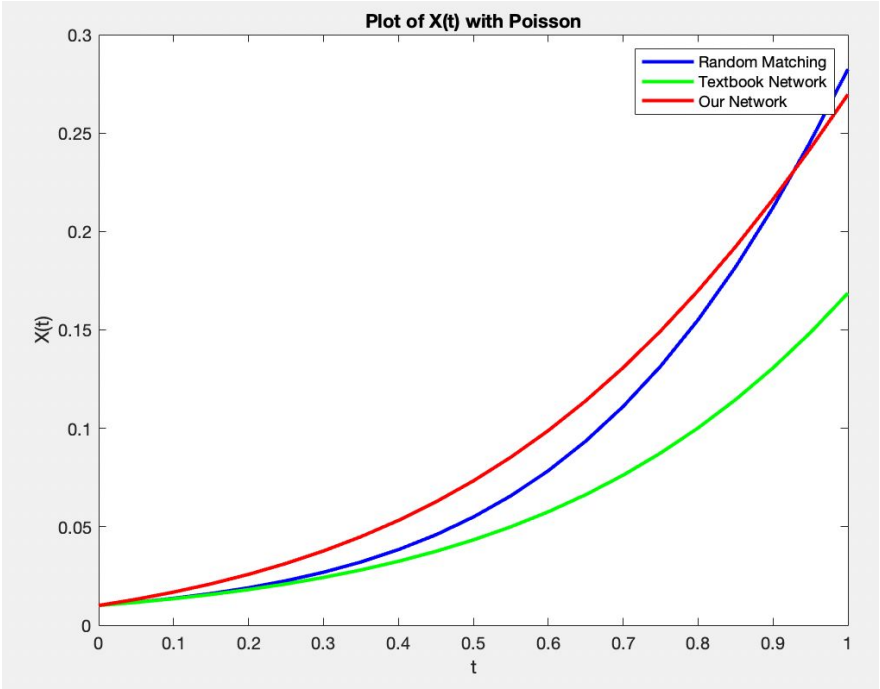
-dvt=-3*1*t=-3t

$$\text{osed-form } x(t) = 1 - (1-\epsilon)\exp(-dvt)$$

V(t)+Poisson



X(t)+Poisson



Our networks: $\dot{v}(t) = \left(\lambda \exp\left(-\int_0^t v(t')dt'\right) - 1\right) v(t)(1 - v(t))$

not sure V(t)=?