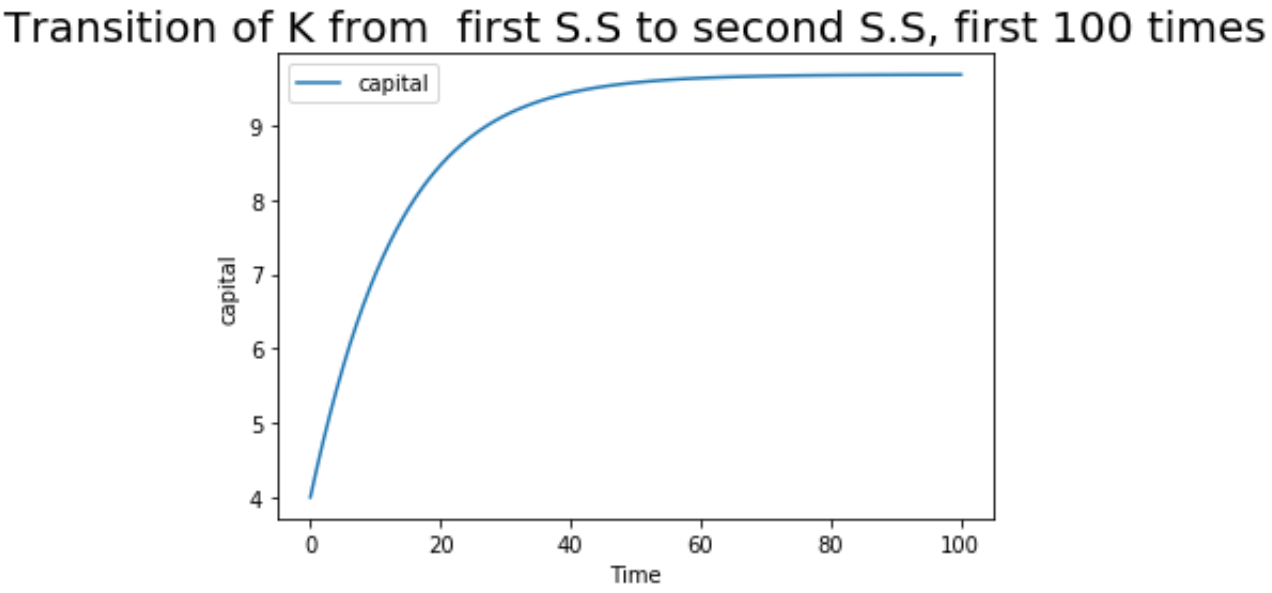
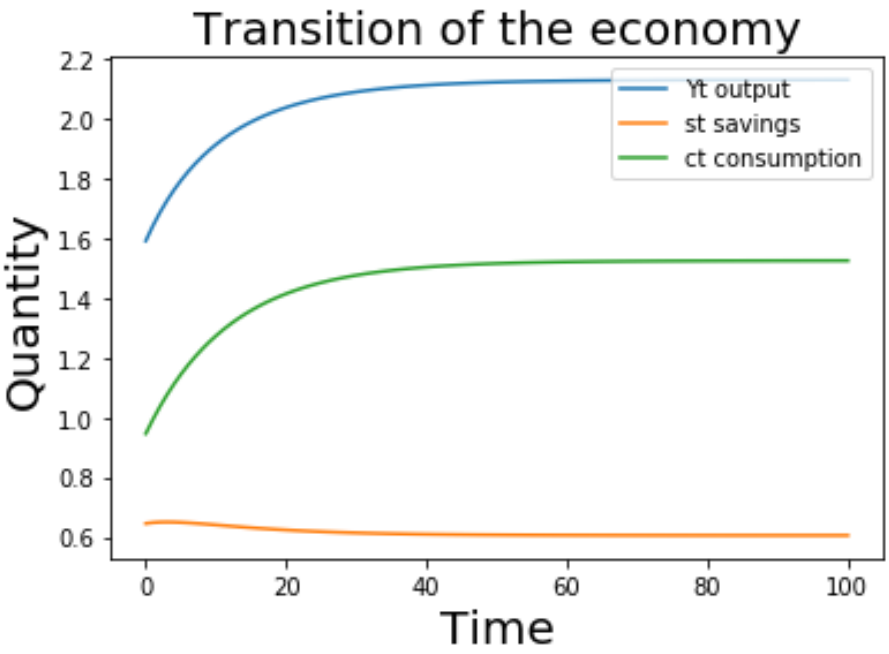
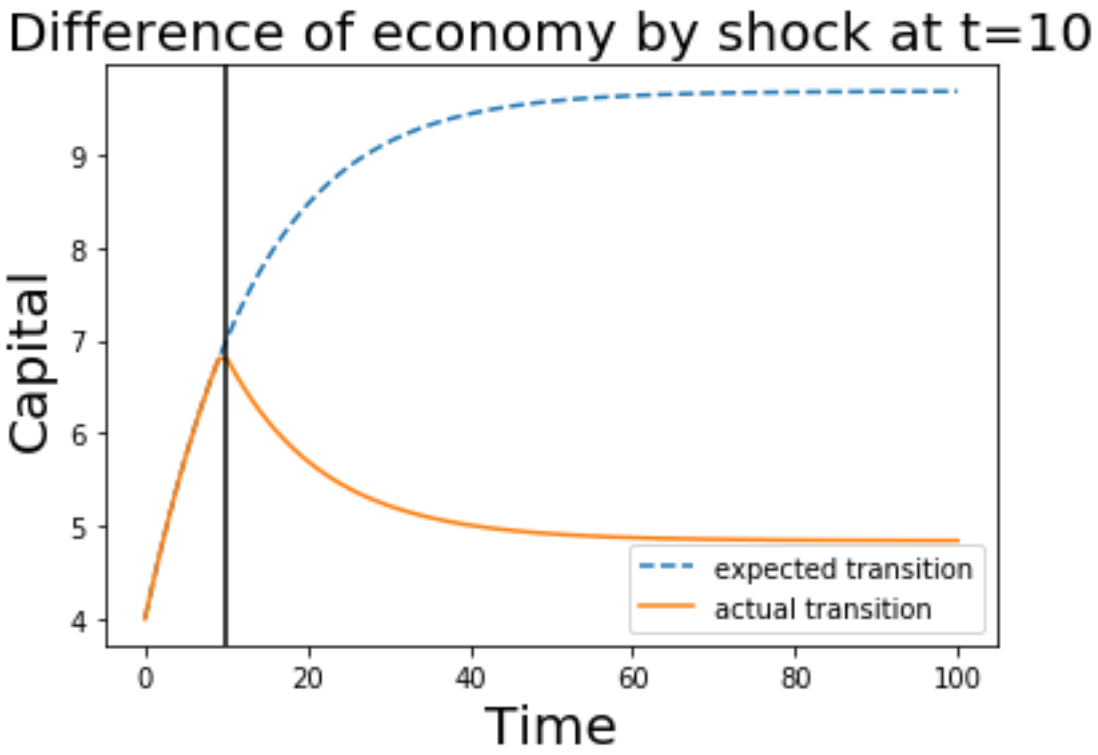
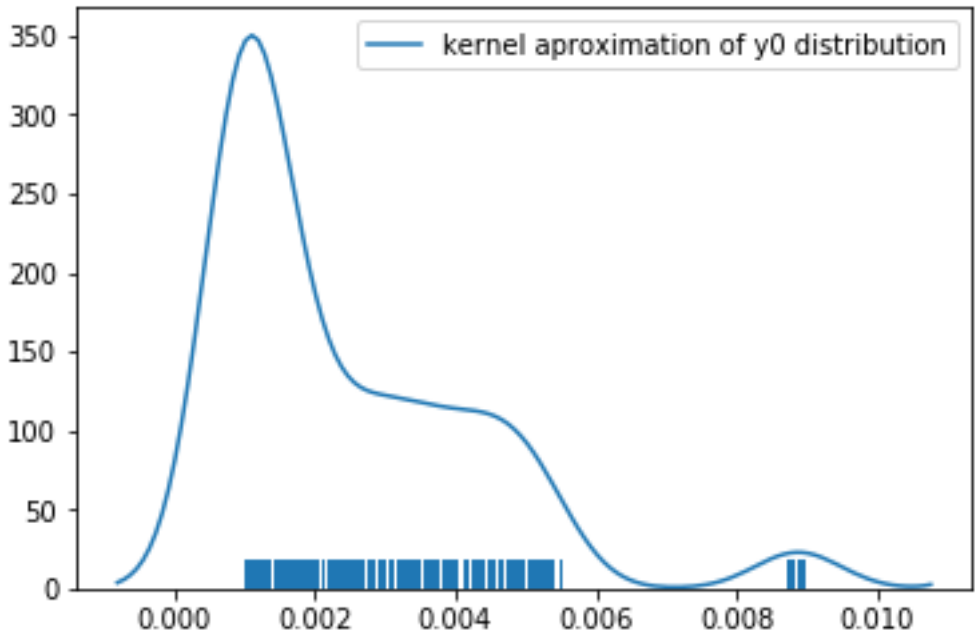
1st Question:



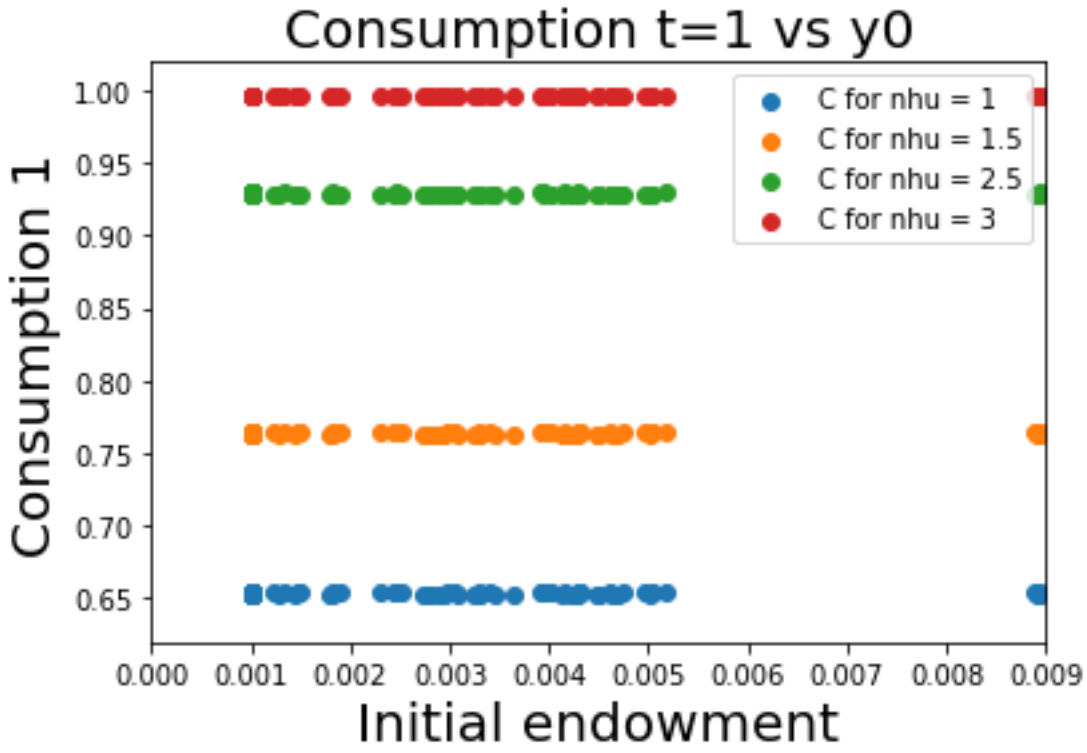



Difference of economy by shock at t=10
Capital
Time
expected transition
actual transition
9
8
7
6
5
4
0
20
40
60
80
100

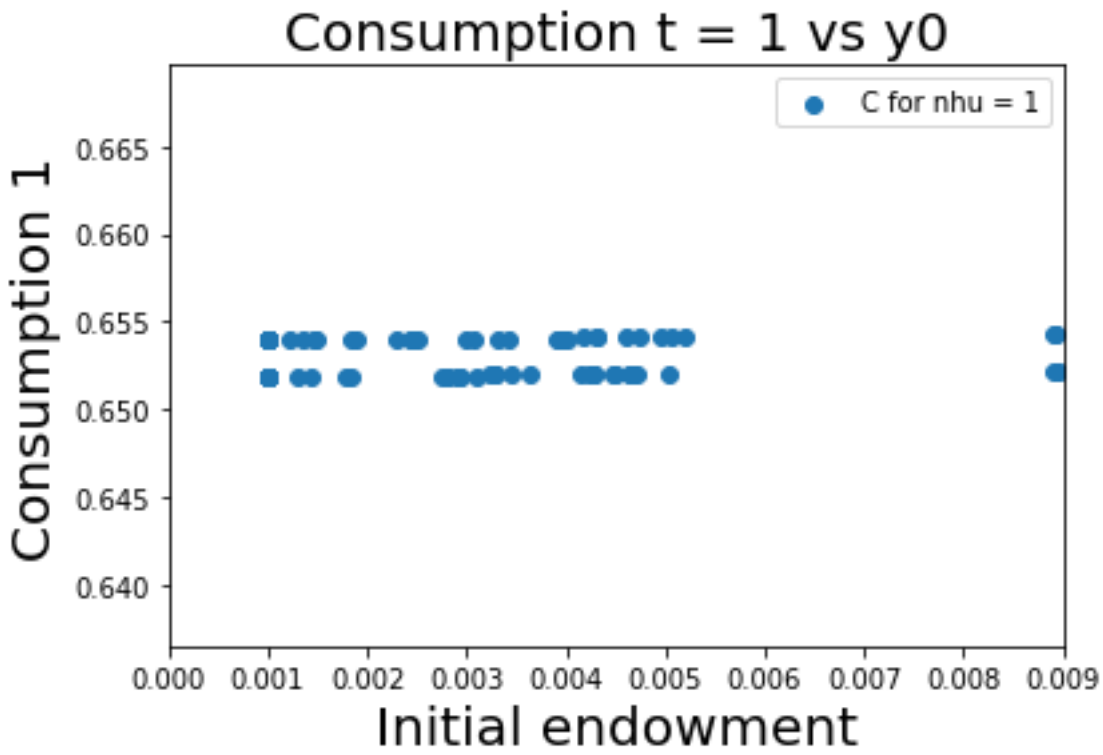
Question 2:

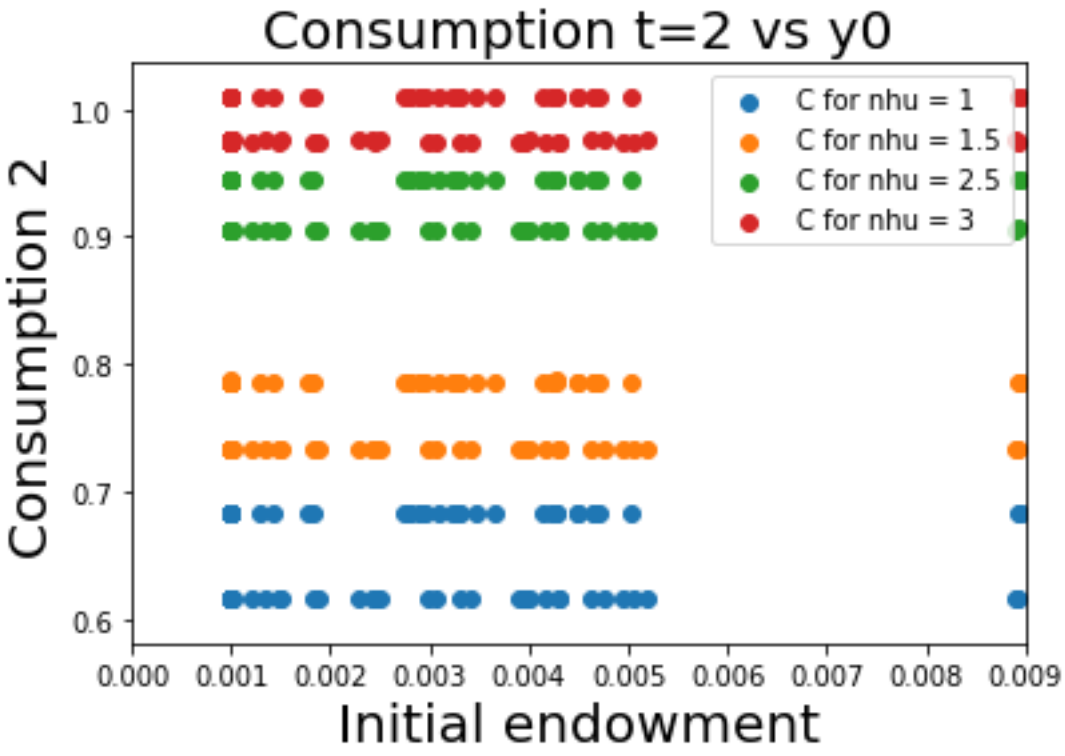

kernel aproximation of y0 distribution
350
300
250
200
150
100
50
0
0.000
0.002
0.004
0.006
0.008
0.010

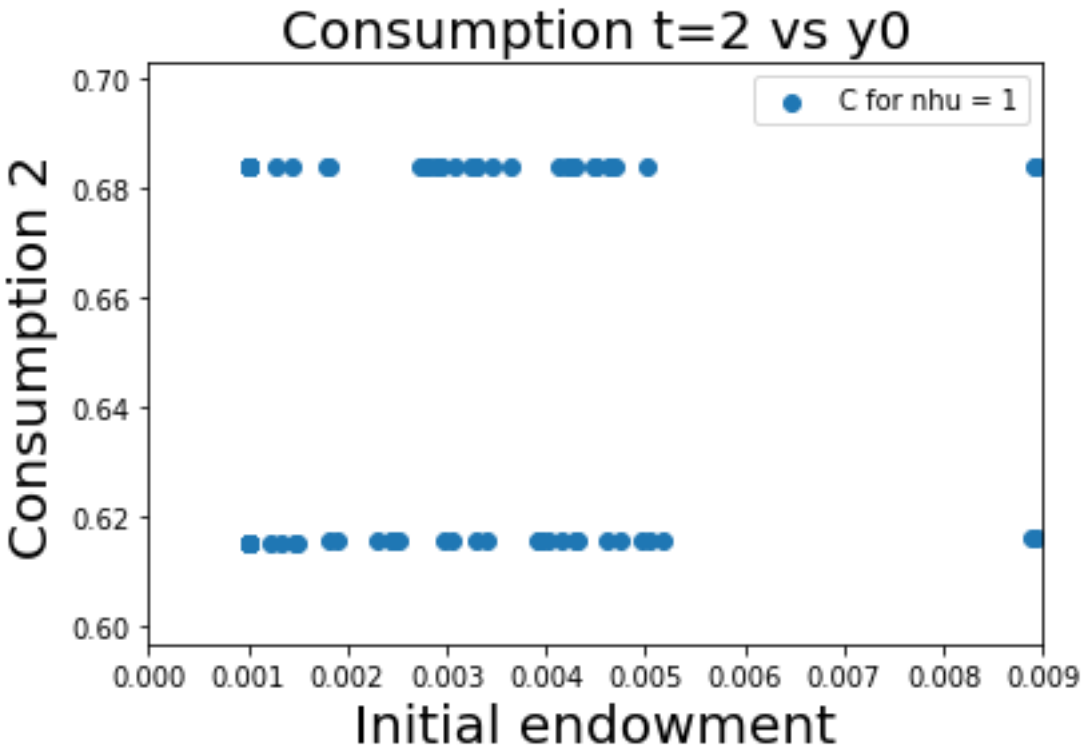
FIGURE(1) AND FIGURE(3)

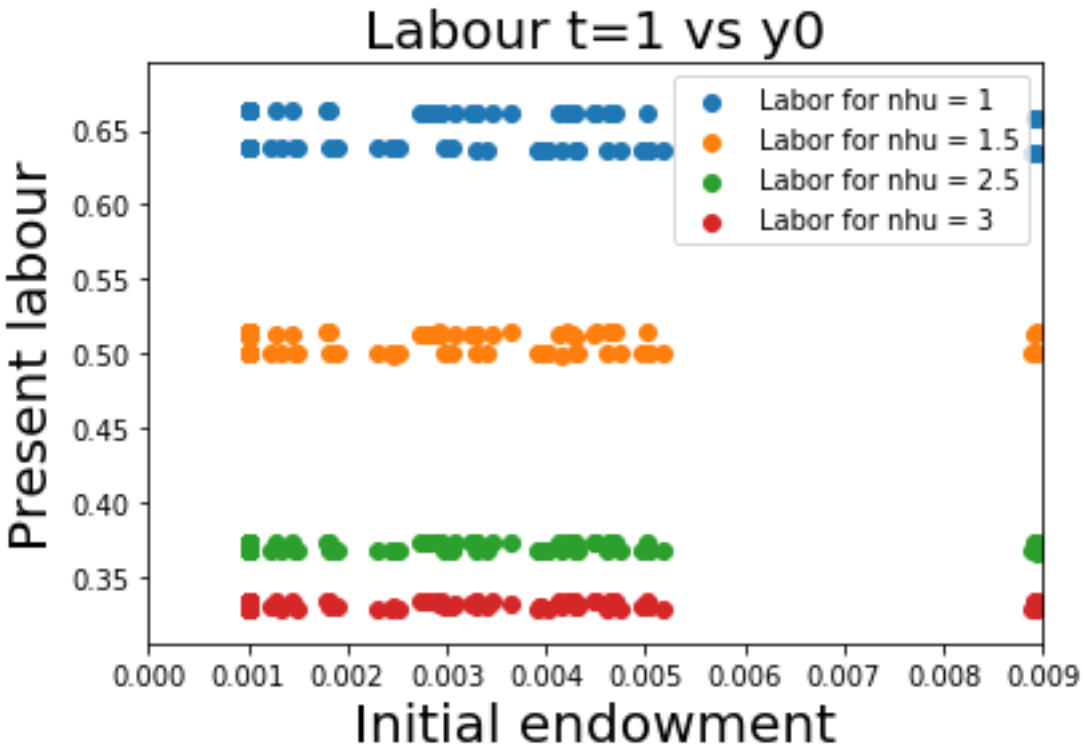


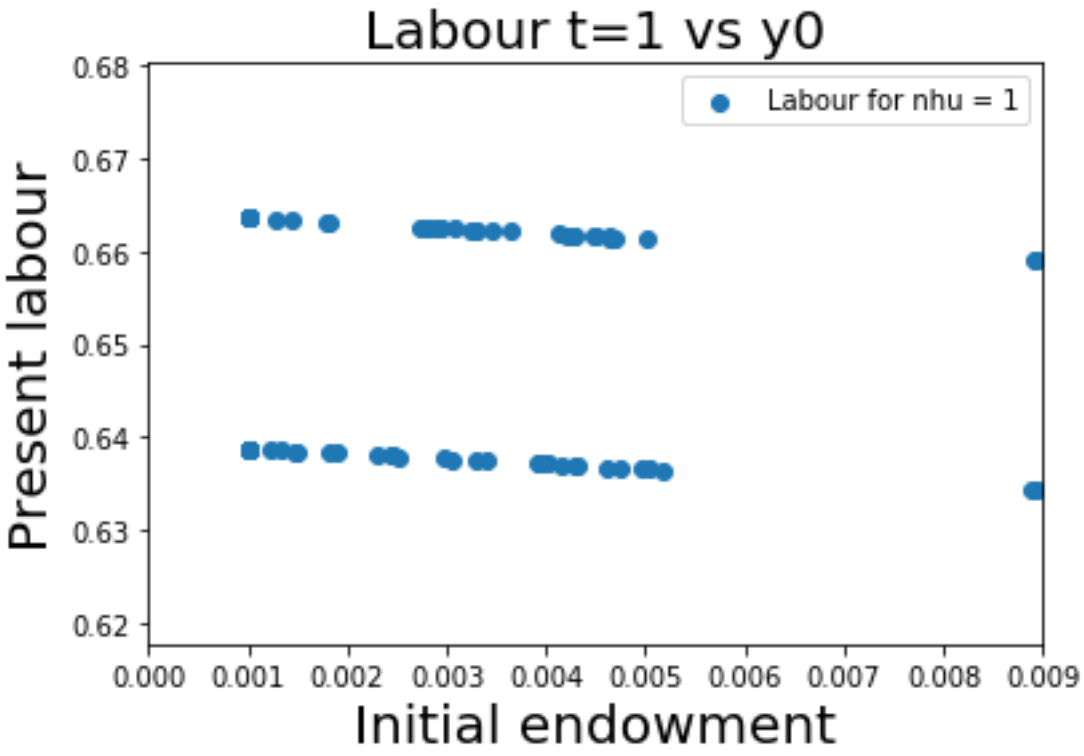
Focusing only in NHU = 1:



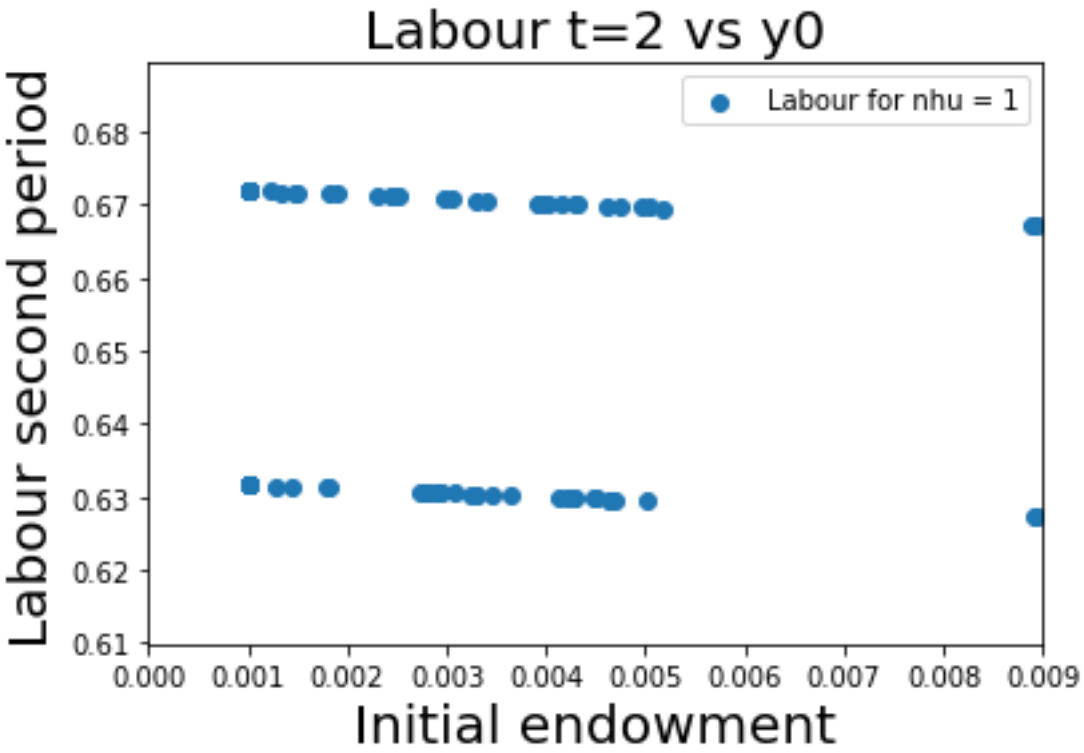

Consumption t=2 vs y0
C for nhu = 1
C for nhu = 1.5
C for nhu = 2.5
C for nhu = 3
Consumption 2
1.0
0.9
0.8
0.7
0.6
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
Initial endowment

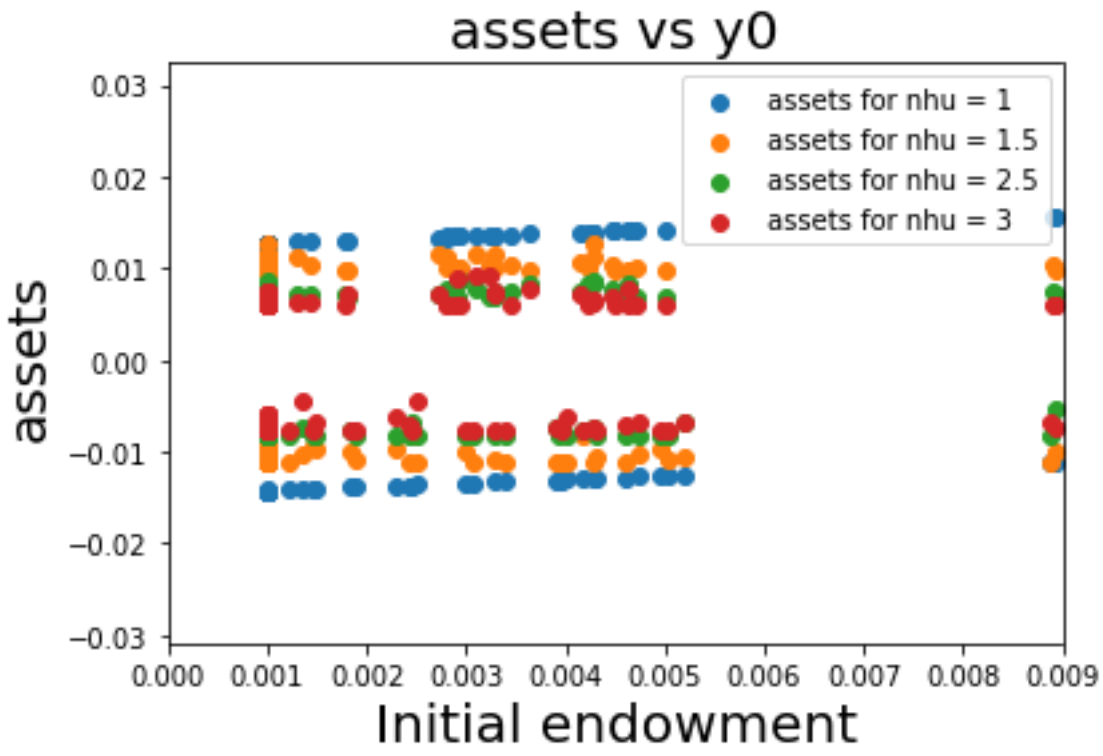

Consumption t=2 vs y0
C for nhu = 1
Consumption 2
0.70
0.68
0.66
0.64
0.62
0.60
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
Initial endowment


Labour t=1 vs y0
Present labour
Initial endowment
Labor for nhu = 1
Labor for nhu = 1.5
Labor for nhu = 2.5
Labor for nhu = 3
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009


Labour t=1 vs y0
Present labour
Initial endowment
Labour for nhu = 1
0.68
0.67
0.66
0.65
0.64
0.63
0.62
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009

Labour t=2 vs y0
Labour second period
Initial endowment
Labor for nhu = 1
Labor for nhu = 1.5
Labor for nhu = 2.5
Labor for nhu = 3
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009


Labour t=2 vs y0
Labour second period
Initial endowment
Labour for nhu = 1
0.68
0.67
0.66
0.65
0.64
0.63
0.62
0.61
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009


assets vs y0
assets for nhu = 1
assets for nhu = 1.5
assets for nhu = 2.5
assets for nhu = 3
assets
Initial endowment
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.03
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009

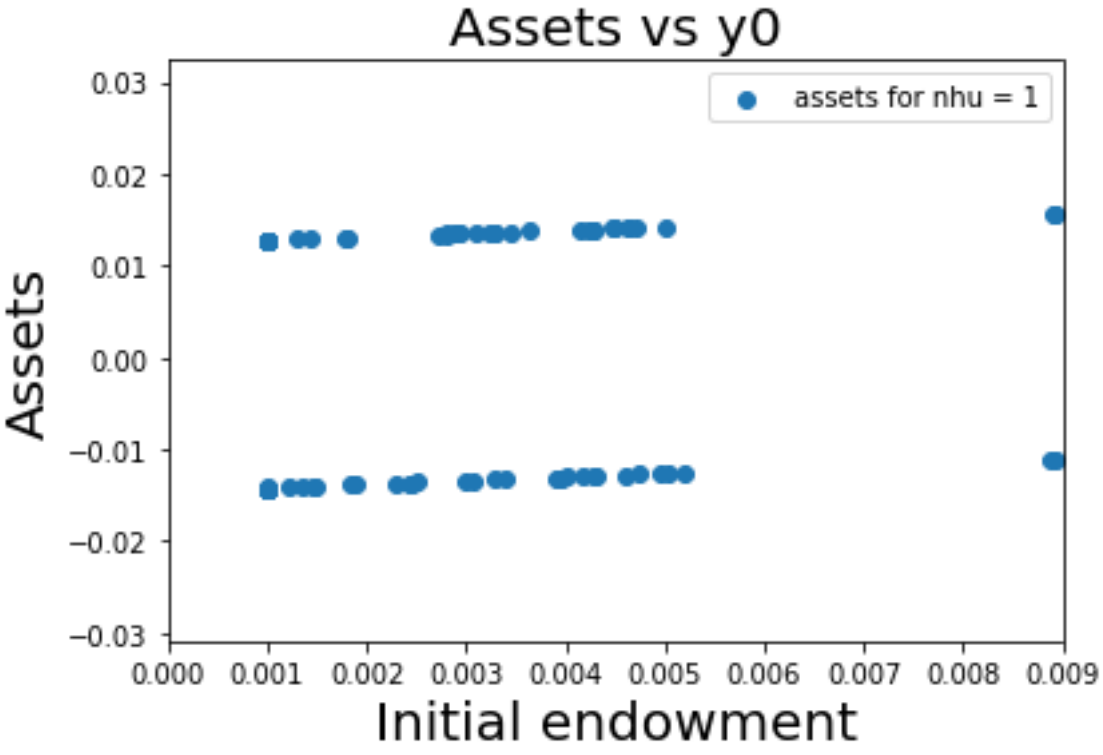
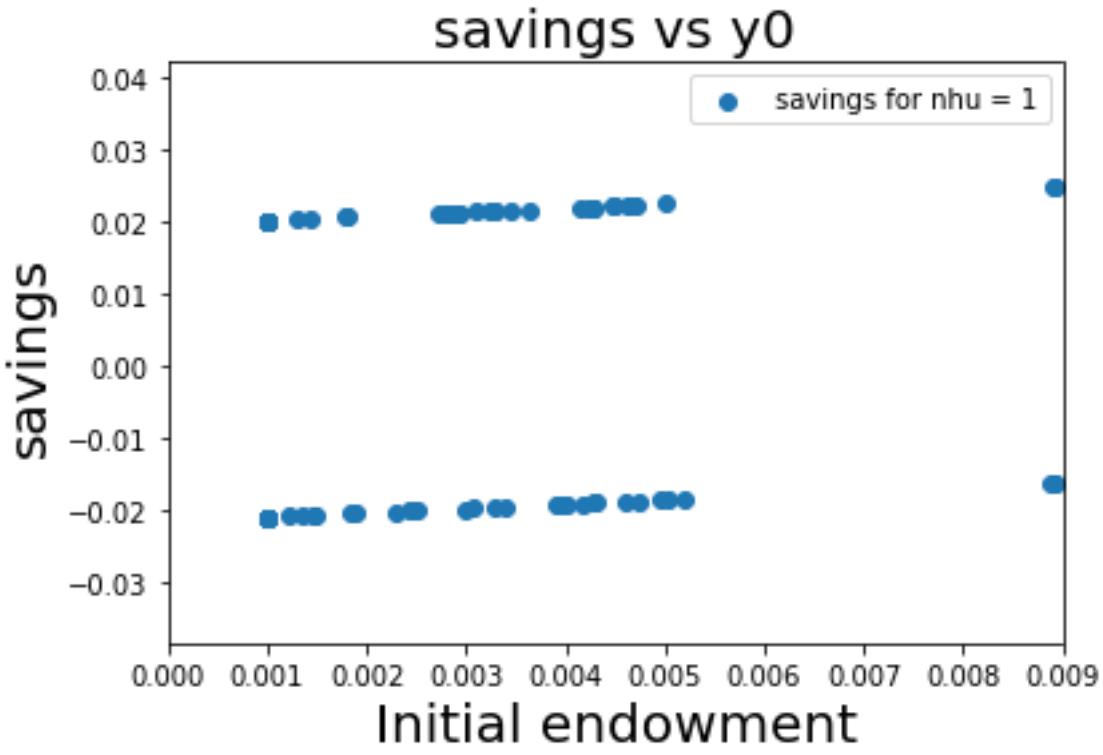
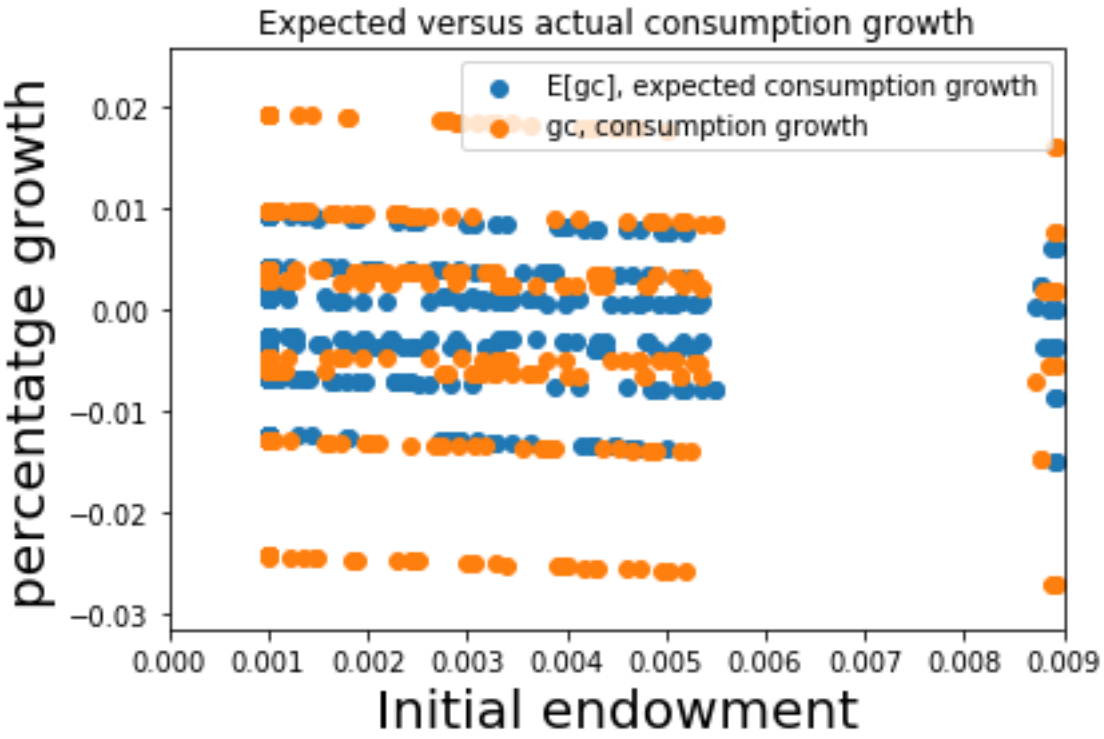

Assets vs y0
assets for nhu = 1
Assets
Initial endowment
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.03
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009

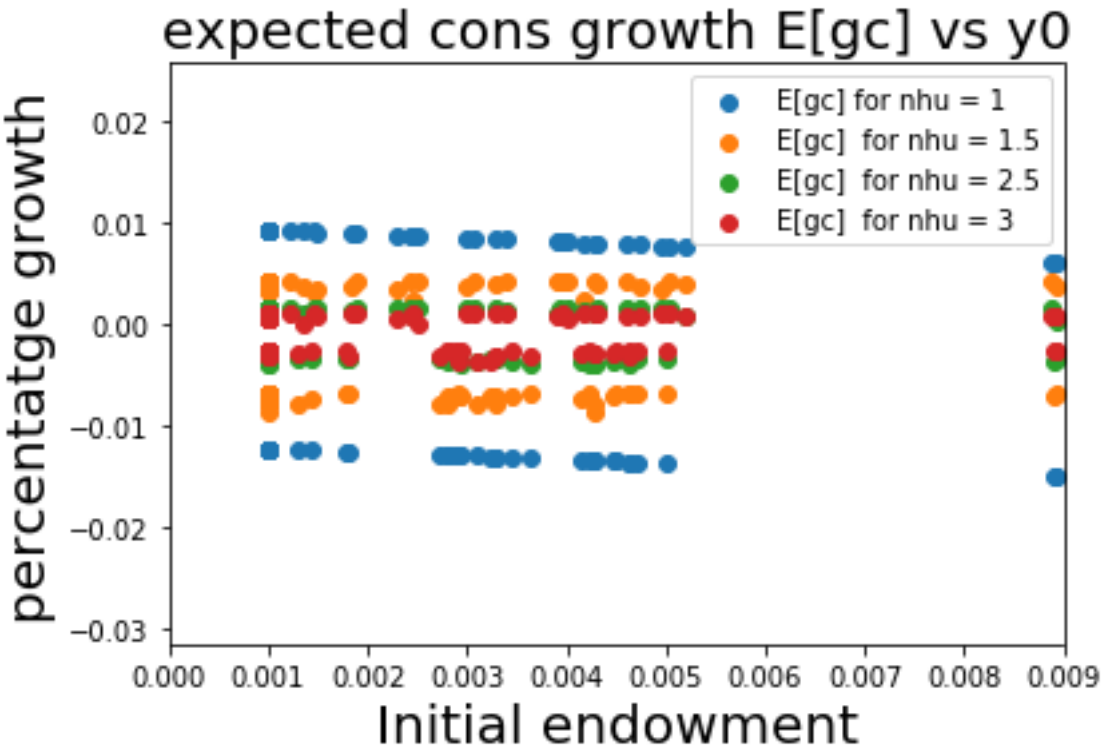
FIGURE (2):

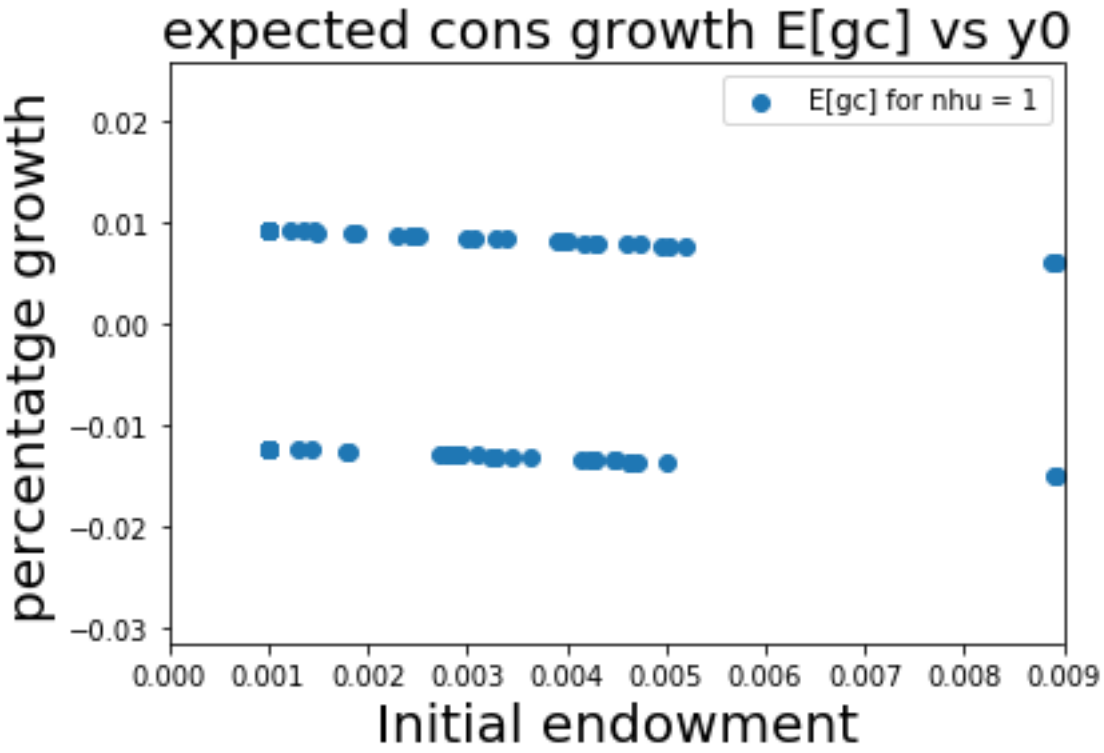
savings vs y0
savings for nhu = 1
savings for nhu = 1.5
savings for nhu = 2.5
savings for nhu = 3
savings
Initial endowment
0.04
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.03
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009


savings vs y0
savings for nhu = 1
savings
Initial endowment
0.04
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.03
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009

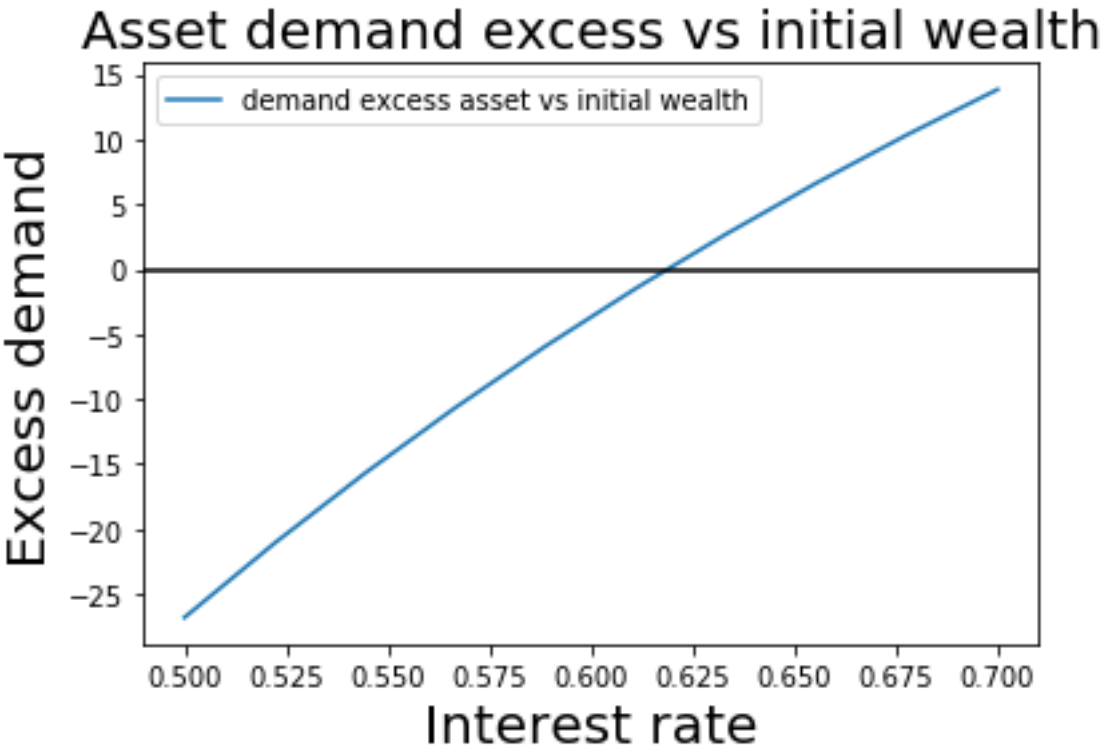
FIGURE(5):


Expected versus actual consumption growth
E[gc], expected consumption growth
gc, consumption growth
percentatge growth
0.02
0.01
0.00
−0.01
−0.02
−0.03
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
Initial endowment


expected cons growth E[gc] vs y0
E[gc] for nhu = 1
E[gc] for nhu = 1.5
E[gc] for nhu = 2.5
E[gc] for nhu = 3
percentatge growth
0.02
0.01
0.00
−0.01
−0.02
−0.03
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
Initial endowment


expected cons growth E[gc] vs y0
E[gc] for nhu = 1
percentatge growth
0.02
0.01
0.00
−0.01
−0.02
−0.03
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
Initial endowment

FIGURE(6):


Asset demand excess vs initial wealth
demand excess asset vs initial wealth
Excess demand
15
10
5
0
−5
−10
−15
−20
−25
0.500
0.525
0.550
0.575
0.600
0.625
0.650
0.675
0.700
Interest rate

Consumption assets and labor in t=1 should not differ among individuals with same ability and same initial endowment this lead me to think that somehow indiividuals are infering the future shock epsilon and answering optimizing with that information, which not follow the logic of the problem. Hence, I have a mistake in the whole question. Nevertheless, I will continue with this mistake for the sake of making a big part of the task, but I am completly aware of my error.

I have run out of time, but I know now quite well the whole process to make the following steps:
In the case of taxes and lump sum transferences I should add a loop on my former system of equation where every time I estimate the optimal allocations I recalculate T1 and T2 such that the sum of the taxes on labour income of this equilibrium is split it equally among everyone. So I iterate again with the new lump sum values, stopping the algorithm when the lump sums between iterations are arbitrarily small.

Besides, I know that my problem with the behaviour of my individuals, taking into account the actual values of their epsilons is in the FOC'S and the feasibility intertemporal constraint I add, so If I would have more time I would try to check them out.