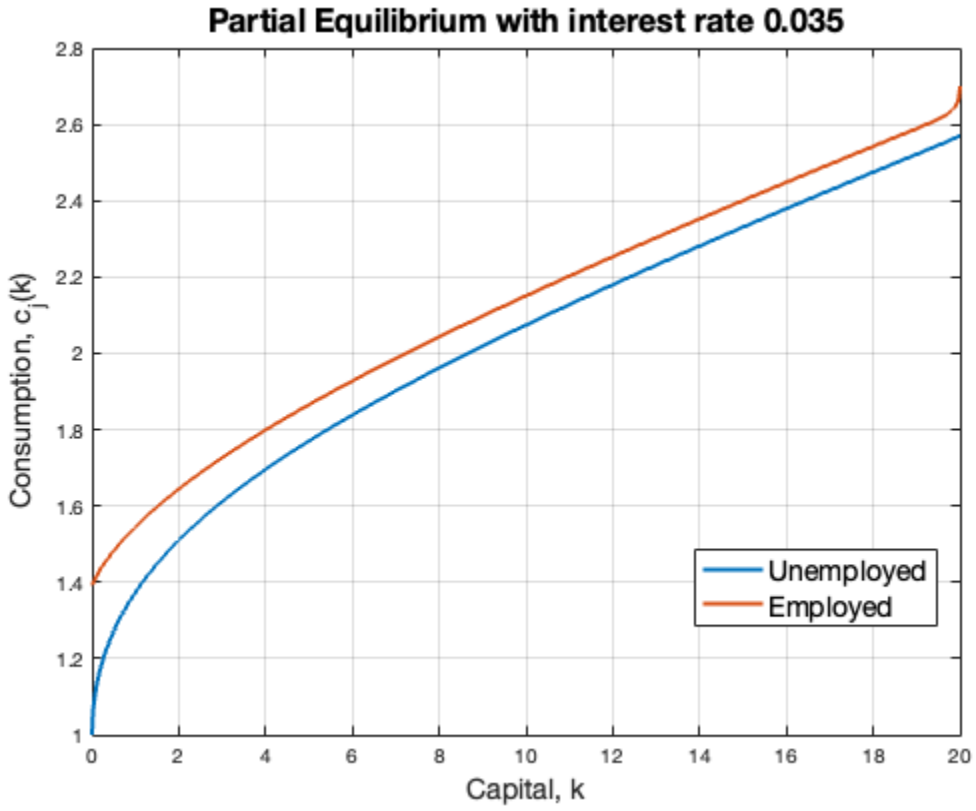
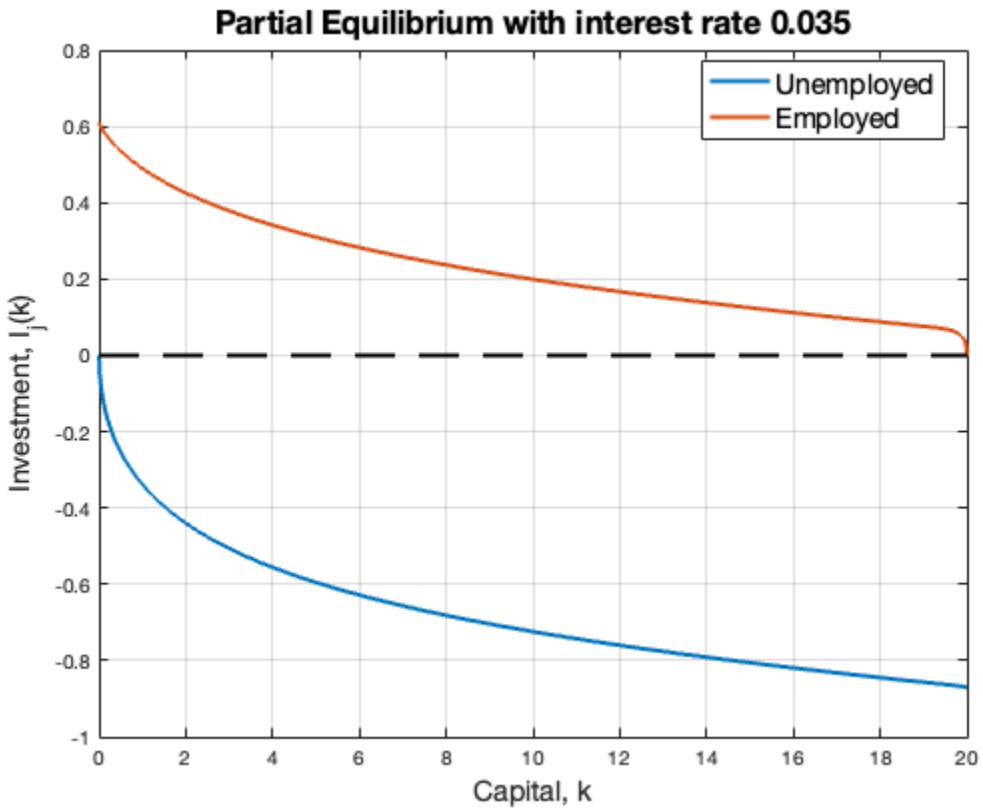
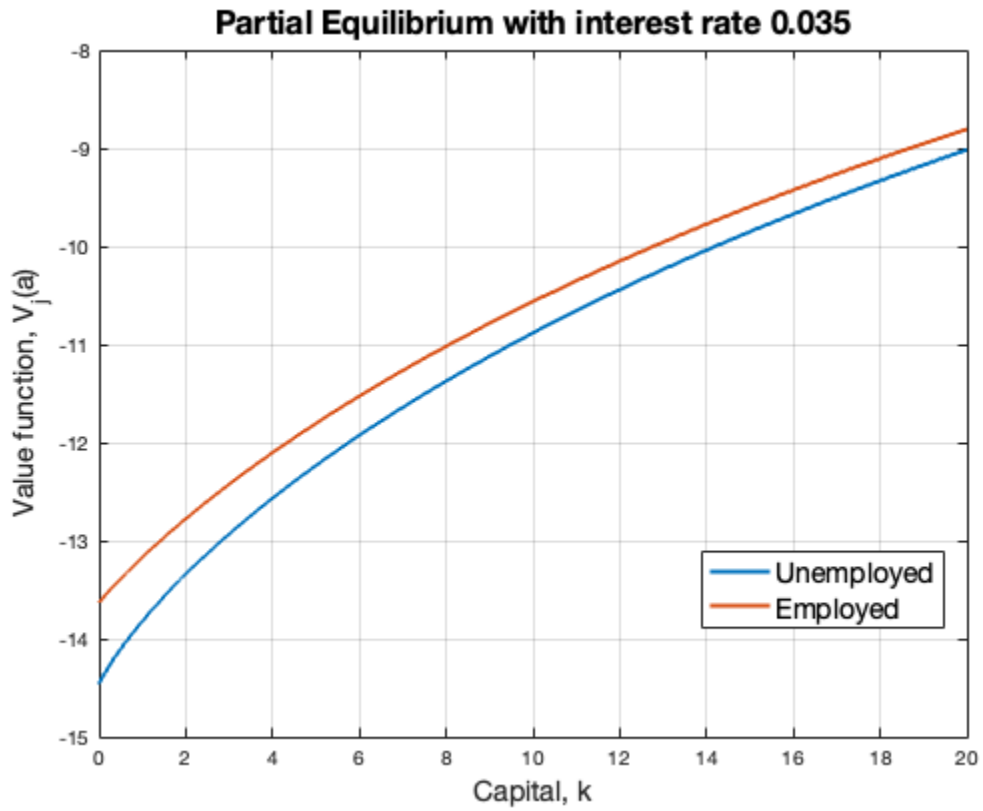
Partial Equilibrium Model

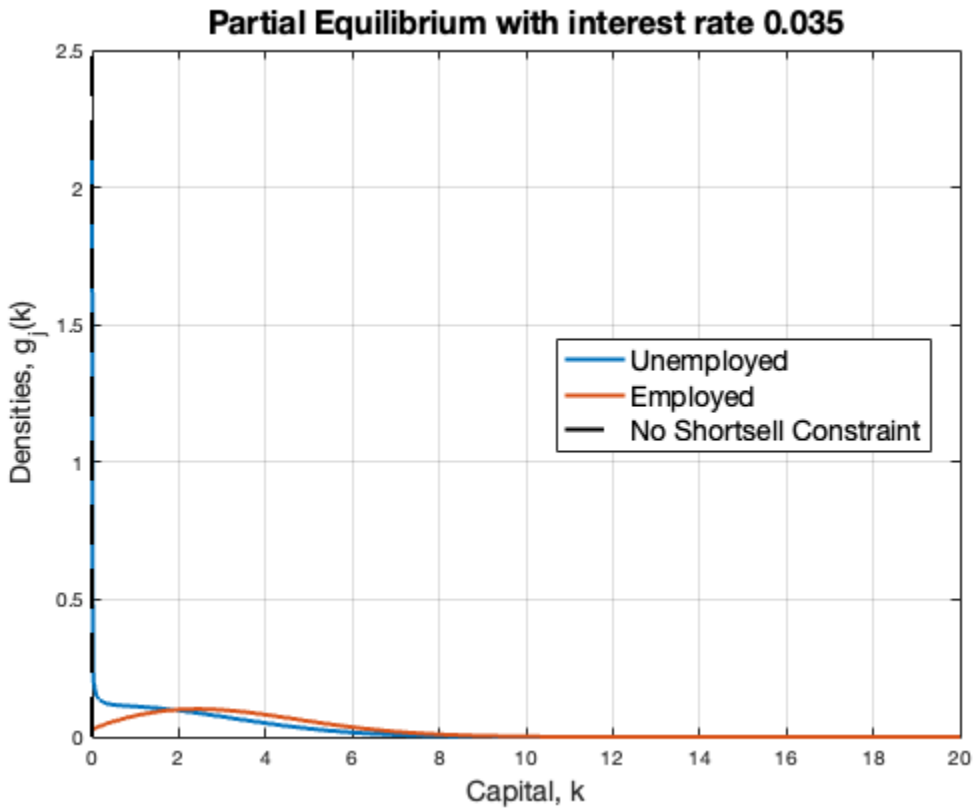
```
cd('/Users/muhammadbashir/GitHub/MuhammadCourses/DynamicProgramming2024/
ProblemSetSolutions/PS5/PE/');
main;
```

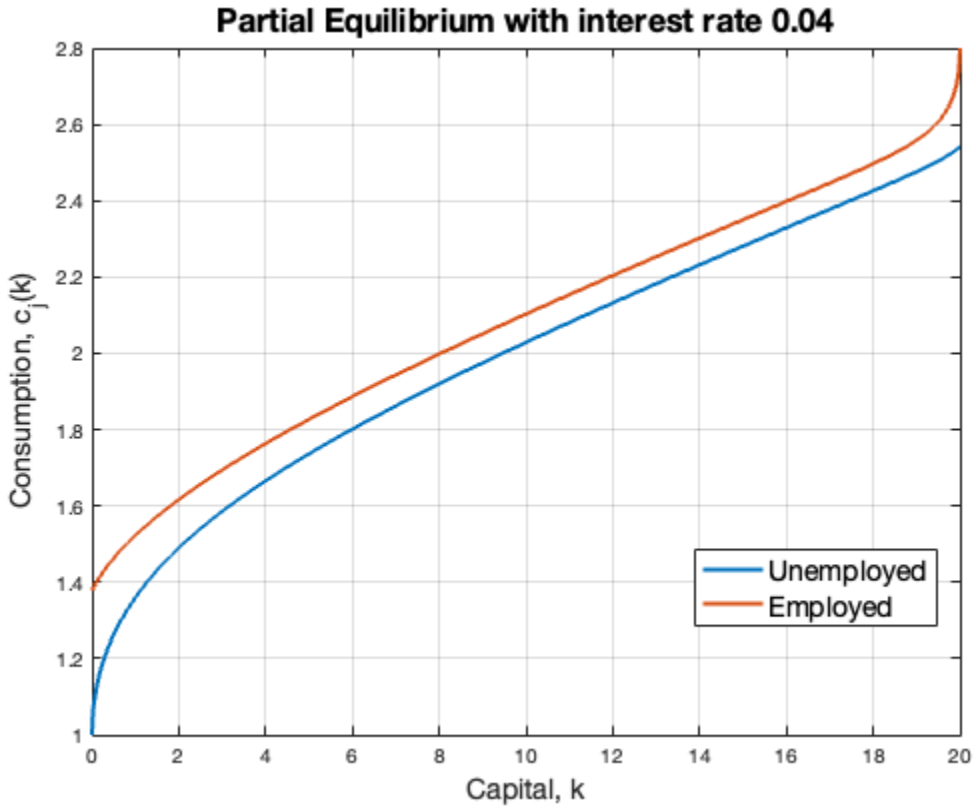
```
Value function converged. Iteration =
    20

Warning: Imaginary parts of complex X and/or Y arguments ignored.
Warning: Imaginary parts of complex X and/or Y arguments ignored.
Warning: Imaginary parts of complex X and/or Y arguments ignored.
Warning: Imaginary parts of complex X and/or Y arguments ignored.
Value function converged. Iteration =
    17

Warning: Imaginary parts of complex X and/or Y arguments ignored.
Warning: Imaginary parts of complex X and/or Y arguments ignored.
Warning: Imaginary parts of complex X and/or Y arguments ignored.
Warning: Imaginary parts of complex X and/or Y arguments ignored.
```

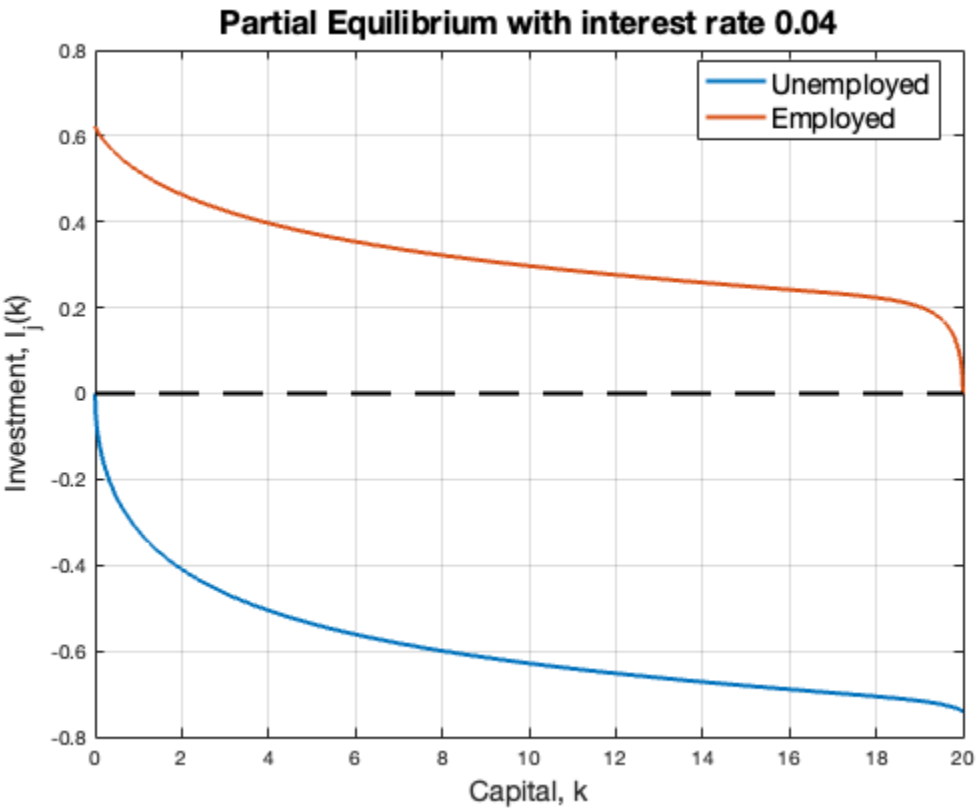


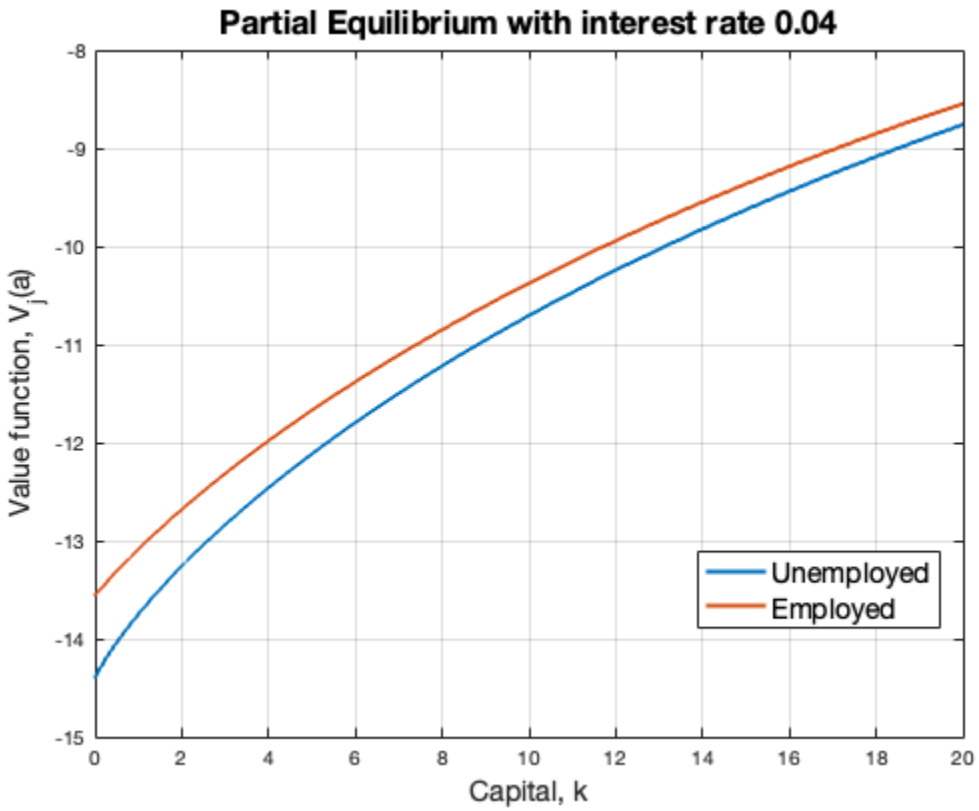

Partial Equilibrium with interest rate 0.035
Unemployed
Employed
Investment, I_j(k)
Capital, k
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
0
2
4
6
8
10
12
14
16
18
20

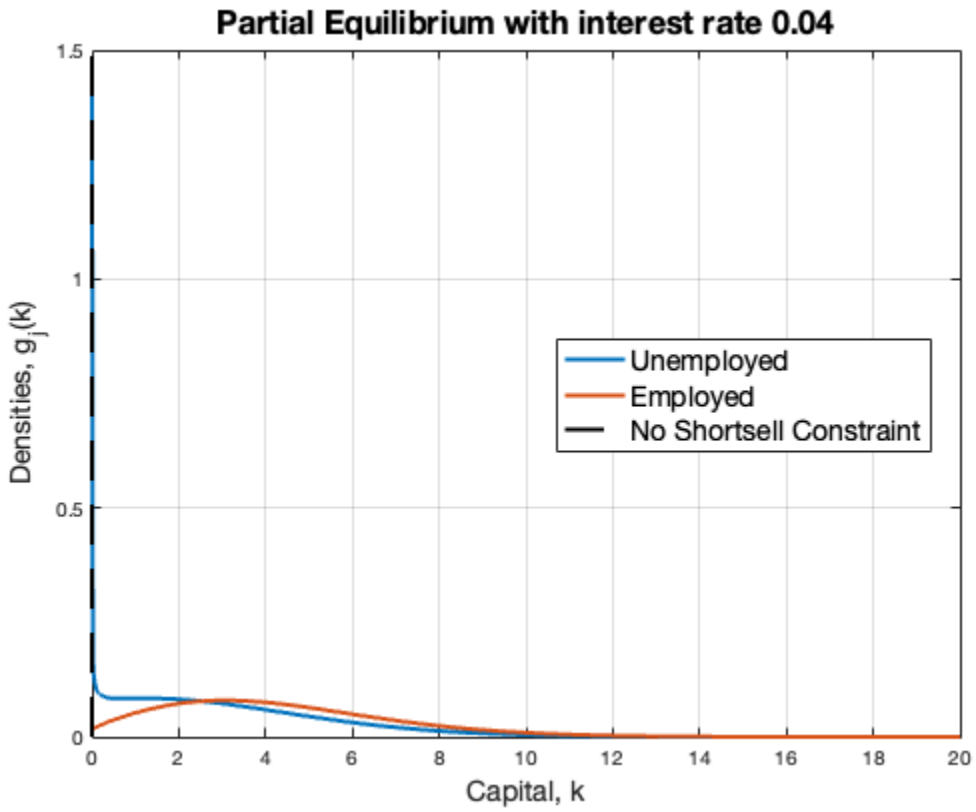

Partial Equilibrium with interest rate 0.035
Unemployed
Employed
Value function, V_j(a)
Capital, k
-8
-9
-10
-11
-12
-13
-14
-15
0
2
4
6
8
10
12
14
16
18
20


Partial Equilibrium with interest rate 0.035
Densities, g_j(k)
Capital, k
Unemployed
Employed
No Shortsell Constraint
0
0.5
1
1.5
2
2.5
0
2
4
6
8
10
12
14
16
18
20


Partial Equilibrium with interest rate 0.04
Consumption, c_j(k)
Capital, k
Unemployed
Employed
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
0
2
4
6
8
10
12
14
16
18
20


Partial Equilibrium with interest rate 0.04
Unemployed
Employed
Investment, I_j(k)
Capital, k
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
0
2
4
6
8
10
12
14
16
18
20


Partial Equilibrium with interest rate 0.04
Unemployed
Employed
Value function, V_j(a)
Capital, k
-8
-9
-10
-11
-12
-13
-14
-15
0
2
4
6
8
10
12
14
16
18
20



General Equilibrium Model & Transition Path

```
cd('/Users/muhammadbashir/GitHub/MuhammadCourses/DynamicProgramming2024/
ProblemSetSolutions/PS5/GE/');
main_GE
```

```
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.068430e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.157375e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.053937e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.132293e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
```

```
RCOND =  5.587138e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.358828e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  8.825020e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  9.957055e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.259508e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.879351e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.138340e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.482797e-19.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  5.038811e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.229658e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  5.939059e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.574516e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
```

```
RCOND =  4.439833e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.497362e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.454905e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  6.781696e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  9.413925e-19.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.305611e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.089572e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.717200e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  7.939624e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.506494e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.015178e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  9.650845e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.100893e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.464970e-17.
Value function converged. Iteration =
    10
```

```
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.447464e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  8.804189e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  9.717504e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.122988e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  6.473107e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  5.748087e-19.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  5.333929e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  6.370179e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.546954e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.170843e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.069231e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  8.311849e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
```

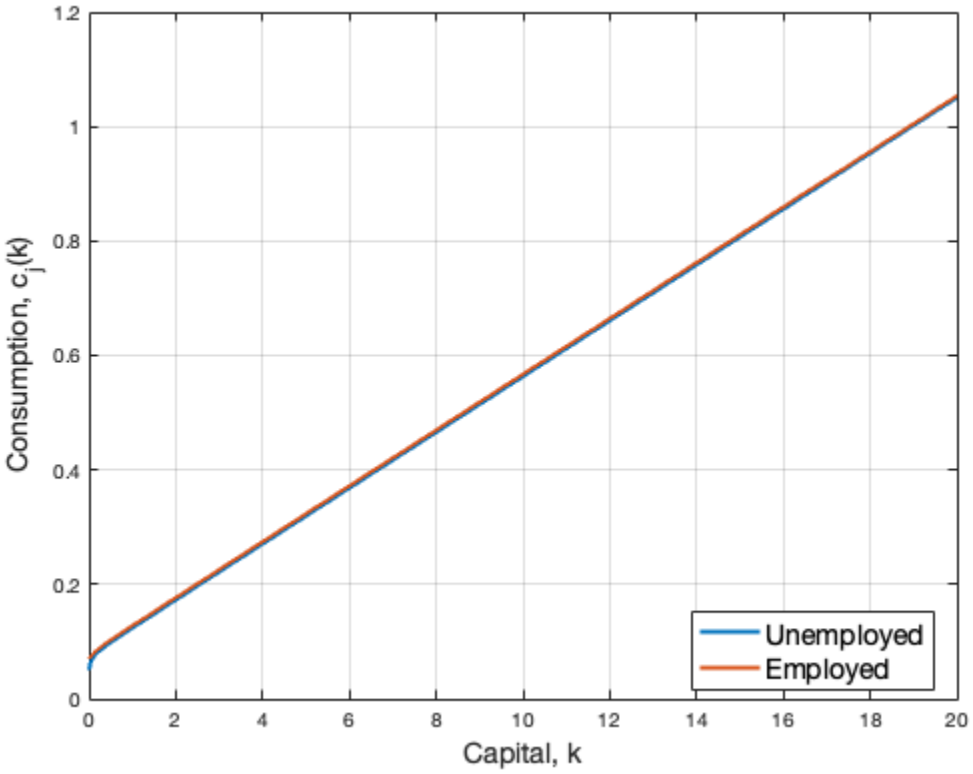
```
RCOND =  1.189312e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.661970e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  6.599192e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.849171e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.042963e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.212066e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.874743e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.209497e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.525398e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.053381e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  7.270992e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.650852e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.883825e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
```

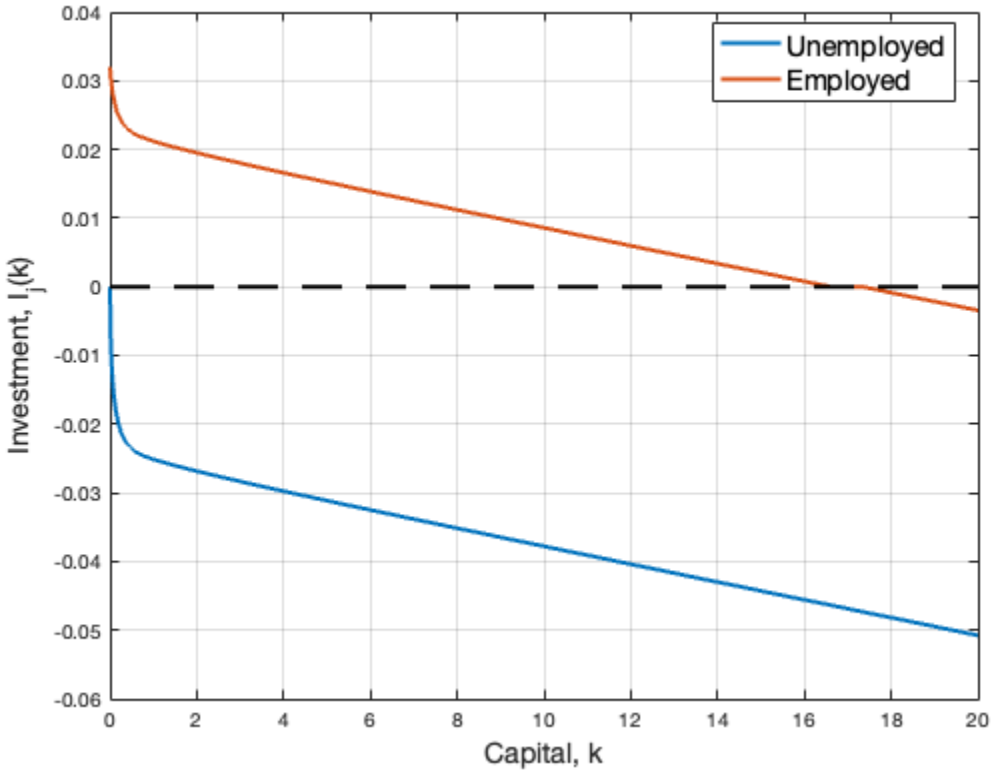
```
RCOND =  3.241923e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.660851e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  6.959871e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.456004e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.655685e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.753054e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.646867e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.164522e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.313586e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.539027e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.167884e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  6.603425e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.703882e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
```

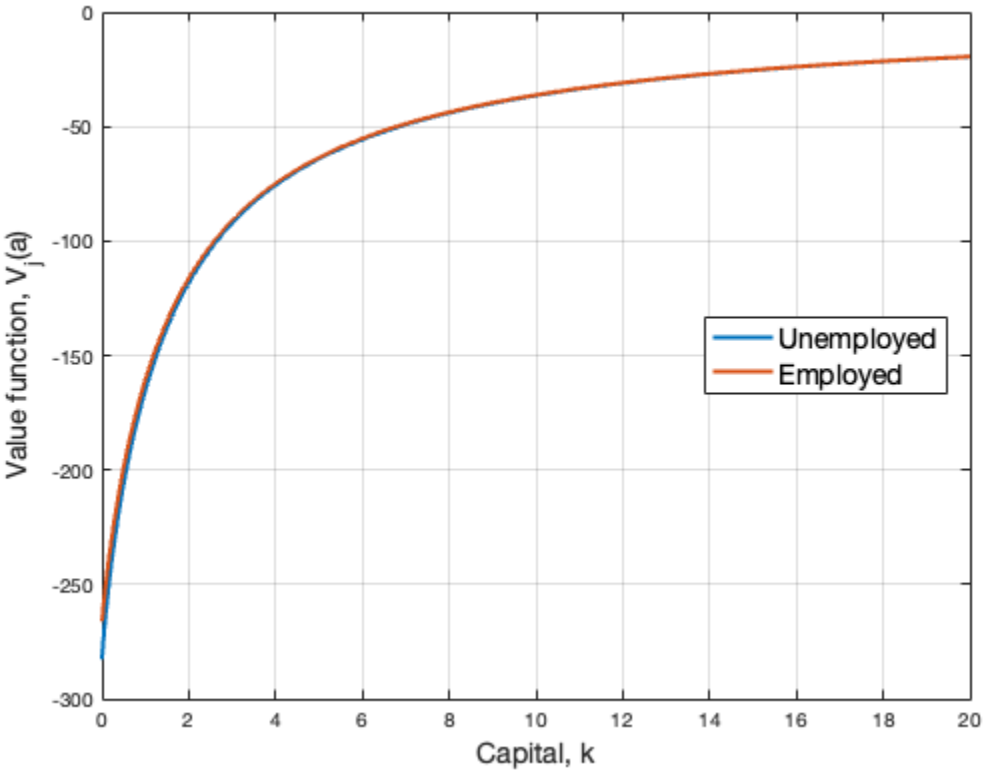
```
RCOND =  5.193814e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.213547e-16.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.945259e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  6.992444e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  7.598188e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.944442e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  9.077343e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.348546e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  8.163008e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  7.969342e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.258837e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.259866e-16.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  5.767321e-19.
Value function converged. Iteration =
    10
```

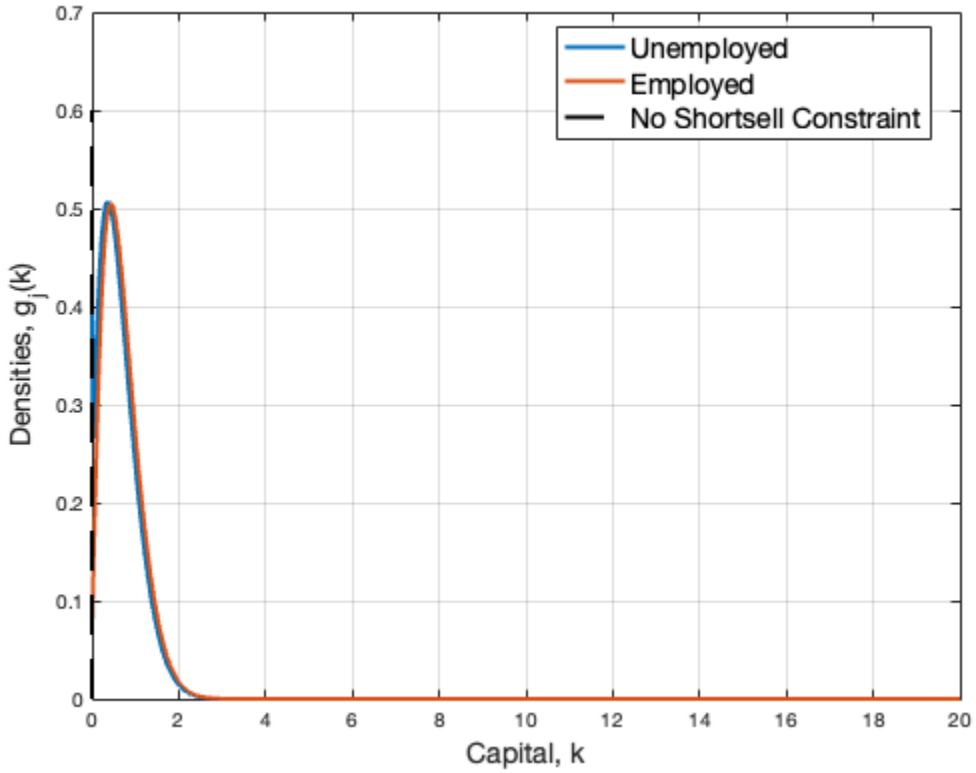
```
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.682417e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.766041e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.127453e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.368717e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  3.007743e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.604332e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.328561e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.489796e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  7.398763e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.853827e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.845408e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.133803e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  1.344025e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
```

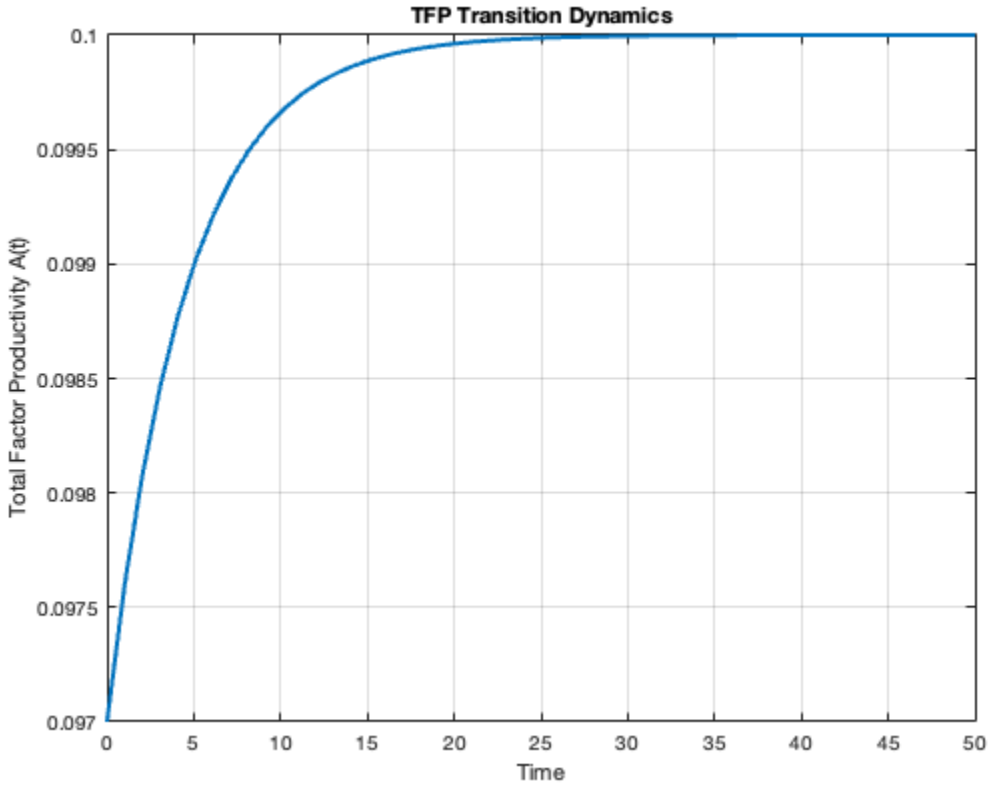
```
RCOND =  4.576456e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.738720e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  8.848370e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  9.270322e-19.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.279245e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  6.917446e-17.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  2.511958e-18.
Value function converged. Iteration =
    10

Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  4.583256e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  5.344987e-18.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  5.201022e-17.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate.
RCOND =  8.650603e-17.
```

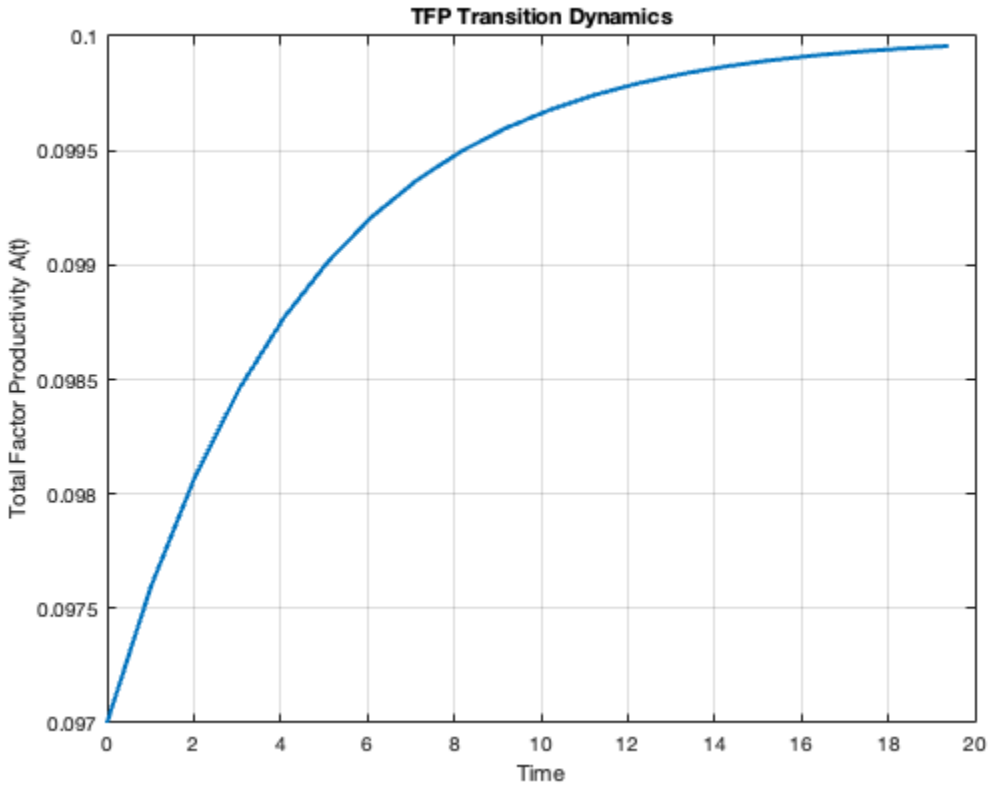

Consumption, $c_j(k)$
Capital, k
Unemployed
Employed
0
0.2
0.4
0.6
0.8
1
1.2
0
2
4
6
8
10
12
14
16
18
20

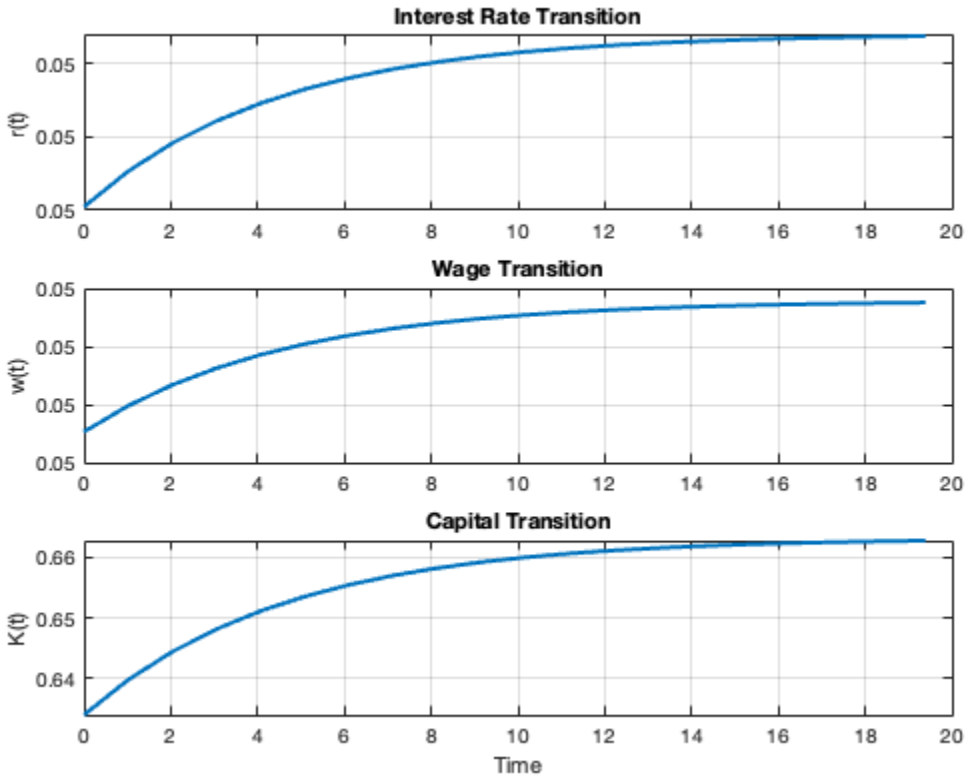

Investment, $I_j(k)$
Capital, k
Unemployed
Employed
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
-0.04
-0.05
-0.06
0
2
4
6
8
10
12
14
16
18
20


Value function, $V_j(a)$
Capital, k
Unemployed
Employed
0
-50
-100
-150
-200
-250
-300
0
2
4
6
8
10
12
14
16
18
20


Densities, $g_j(k)$
Capital, k
Unemployed
Employed
No Shortsell Constraint
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
10
12
14
16
18
20


TFP Transition Dynamics
Total Factor Productivity A(t)
Time
0.1
0.0995
0.099
0.0985
0.098
0.0975
0.097
0
5
10
15
20
25
30
35
40
45
50


TFP Transition Dynamics
Total Factor Productivity A(t)
Time
0.1
0.0995
0.099
0.0985
0.098
0.0975
0.097
0
2
4
6
8
10
12
14
16
18
20



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