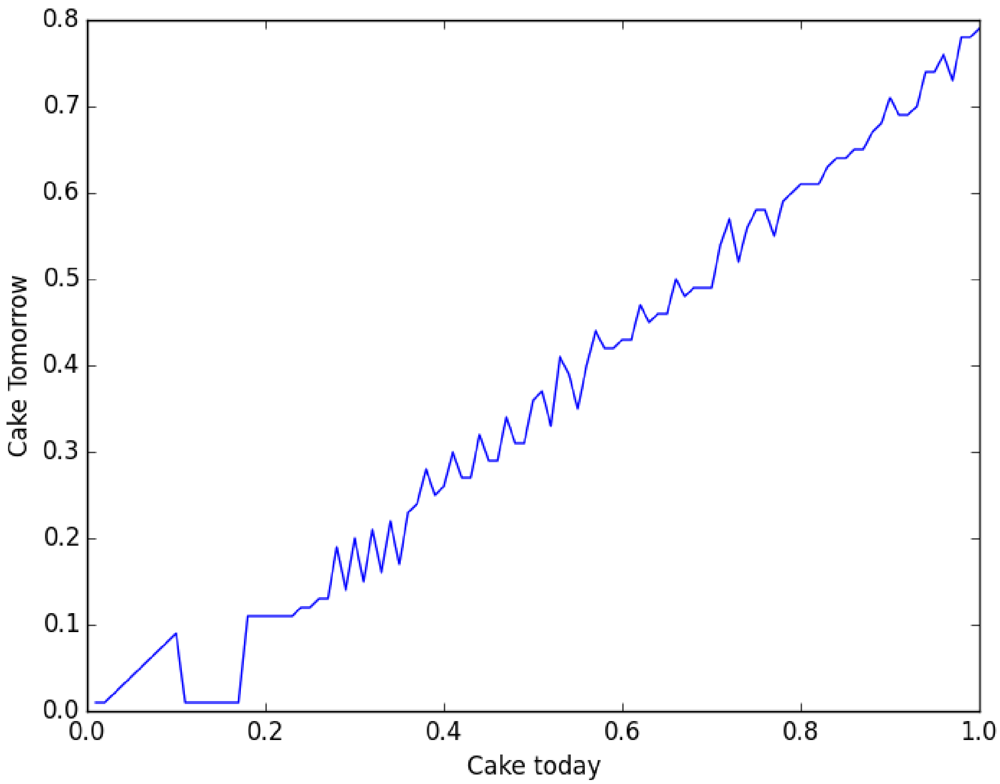
1 First Section

1.1 5.31



The policy function takes 17 iterations to converges to within the error tolerance. This is much quicker than the 134 iterations it took in 5.14

1.2 6.1

$$
\begin{aligned}
\frac{1}{e^{z_t}K_t^{\alpha} - K_{t+1}} &= \beta E_t \frac{\alpha e^{z_t+1} K_{t+1}^{\alpha-1}}{e^{z_t+1}K_{t+1}^{\alpha} - K_{t+2}} \\
&= \beta E_t \frac{\alpha e^{\rho z_t + \sigma \epsilon_t} K_{t+1}^{\alpha-1}}{e^{\rho z_t+\sigma\epsilon_t}K_{t+1}^{\alpha} - Ae^{\rho z_t+\sigma\epsilon_t}K_{t+1}^{\alpha}} \\
&= \beta E_t \frac{\alpha}{K_{t+1}(1-A)} \\
&= \beta \frac{\alpha}{K_{t+1}(1-A)} \\
= \frac{1}{K_{t+1}(\frac{1-A}{A})} &= \beta \frac{\alpha}{K_{t+1}(1-A)} \\
&\implies A = \beta\alpha
\end{aligned}
$$

1.3 6.2

$$R_t = \alpha e_t^z K_t^{\alpha-1} L_t^{1-\alpha}$$
$$L_t = (1-\alpha) e_t^z K_t^{\alpha} L_t^{-} \alpha$$
$$\frac{1}{c_t} = \beta E_t \left[\frac{1}{c_{t+1}} [(r_{t+1} - \delta)(1-\tau) + 1] \right]$$
$$\frac{a}{1-l_t} = \frac{1}{c_t} w_t (1-\tau)$$

1.4 6.3

$$R_t = \alpha e_t^z K_t^{\alpha-1} L_t^{1-\alpha}$$
$$L_t = (1-\alpha) e_t^z K_t^{\alpha} L_t^{-\alpha}$$
$$\frac{1}{c_t^{\gamma}} = \beta E_t \left[\frac{1}{c_{t+1}^{\gamma}} [(r_{t+1} - \delta)(1-\tau) + 1] \right]$$
$$\frac{a}{1-l_t} = \frac{1}{c_t^{\gamma}} w_t (1-\tau)$$

1.5 6.4

$$R_t = \alpha e^{z_t} K_t^{\eta-1} \left[\alpha K_t^{\eta} + (1-\alpha) L_t^{\eta} \right]^{\frac{1-\eta}{\eta}}$$
$$L_t = (1-\alpha) \eta L_t^{\eta-1} e^{z_t} \left[\alpha K_t^{\eta} + (1-\alpha) L_t^{\eta} \right]^{\frac{1-\eta}{\eta}}$$
$$\frac{1}{c_t^{\gamma}} = \beta E_t \left[\frac{1}{c_{t+1}^{\gamma}} [(r_{t+1} - \delta)(1-\tau) + 1] \right]$$
$$\frac{-a}{(1-l_t)^{\xi}} = \frac{1}{c_t^{\gamma}} w_t (1-\tau)$$

1.6 6.5

Characterizing equations:

$$R_t = \alpha K_t^{\alpha-1} (e^{z_t} L_t)^{1-\alpha}$$
$$L_t = (1-\alpha)(e_t^z)^{1-\alpha} K_t^{\alpha} L_t^{-\alpha}$$
$$\frac{1}{c_t^{\gamma}} = \beta E_t \left[\frac{1}{c_{t+1}^{\gamma}} [(r_{t+1} - \delta)(1-\tau) + 1] \right]$$

Steady-state versions of equations:

$$\bar{R} = \alpha \bar{K}^{\alpha-1} (e^{\bar{z}} \bar{L})^{1-\alpha}$$

$$\bar{L} = (1-\alpha)(e^{\bar{z}})^{1-\alpha}\bar{K}^{\alpha}\bar{L}^{-\alpha}$$
$$\frac{1}{\bar{c}^{\gamma}} = \beta \bar{E}\left[\frac{1}{\bar{c}^{\gamma}}[(\bar{r}-\delta)(1-\tau)+1]\right]$$

Steady-state value of K:

$$\bar{K} = \Big((\frac{1-\beta}{\beta(1-\tau)}+\delta)\frac{1}{\alpha(e^{\bar{z}})^{1-\alpha}}\Big)^{\frac{1}{(1-\alpha)}}$$

Steady-state values of variables:

$$k = 7.28749795$$
$$y = 2.21325461$$
$$i = 0.7287498$$
$$c = 1.48450482$$
$$r = 0.12148228$$
$$w = 1.32795277$$
$$T = 0.07422524$$

1.7 6.6

Characterizing equations:

$$R_t = \alpha K_t^{\alpha-1}(e^{z_t}L_t)^{1-\alpha}$$
$$L_t = (1-\alpha)(e_t^{z})^{1-\alpha}K_t^{\alpha}L_t^{-\alpha}$$
$$\frac{1}{c_t^{\gamma}} = \beta E_t\left[\frac{1}{c_{t+1}^{\gamma}}[(r_{t+1}-\delta)(1-\tau)+1]\right]$$
$$a(1-L_t)^{-\xi} = c^{-\gamma}w(1-\tau)$$

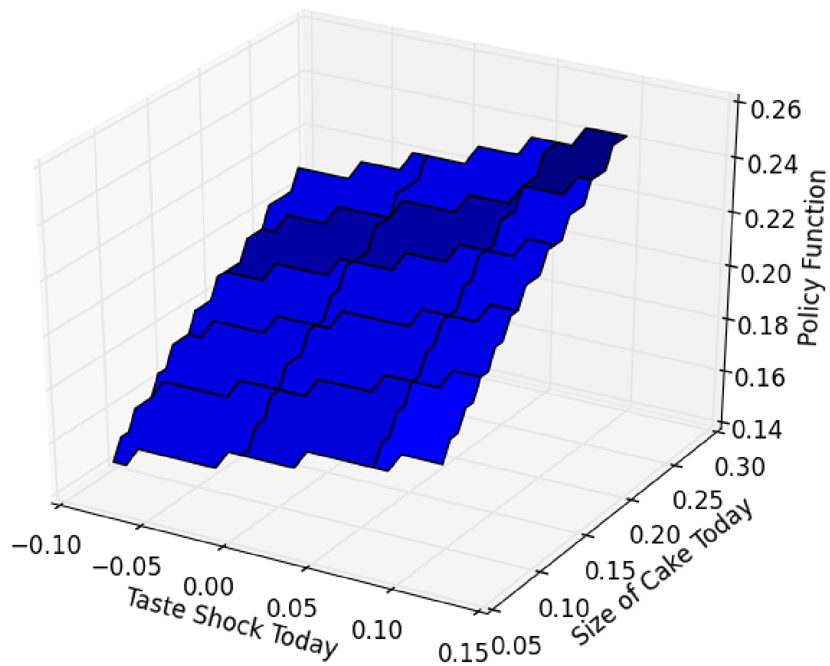
Steady State versions:

$$\bar{K} = \Big((\frac{1-\beta}{\beta(1-\tau)}+\delta)\frac{1}{\alpha(e^{\bar{z}})^{1-\alpha}}\Big)^{\frac{1}{(1-\alpha)}}$$

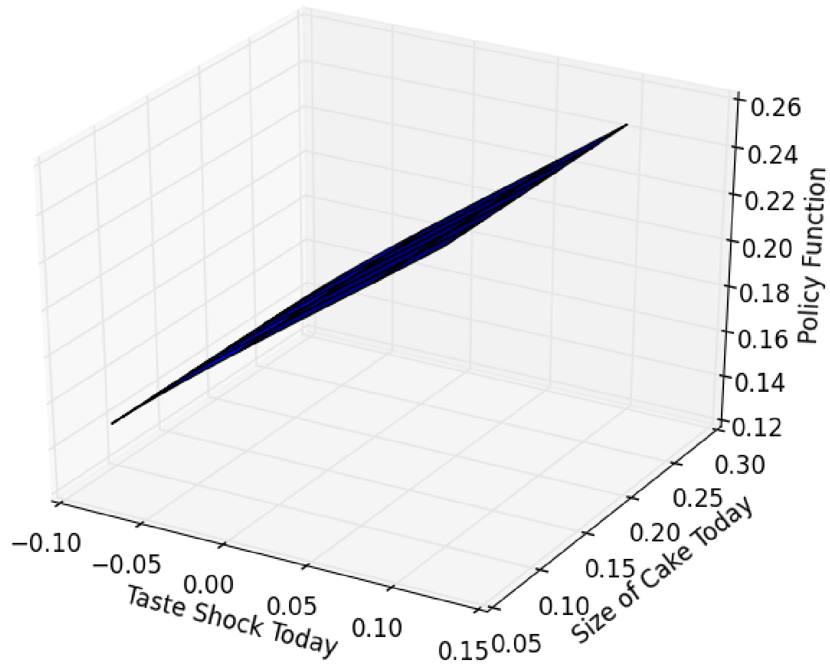
Steady-state values of variables:

$$k = 4.22522902678$$
$$l = 0.579791453167$$
$$y = 1.28322610883$$
$$i = 0.422522902678$$
$$c = 0.860703206154$$
$$r = 0.121482277121$$
$$w = 1.32795276835$$
$$T = 0.0430351603077$$

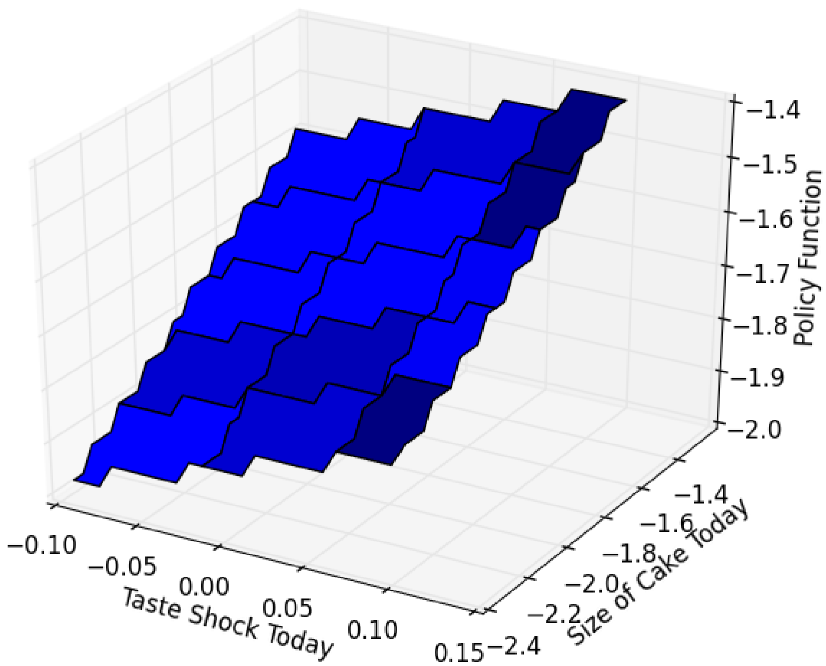
1.8 6.8



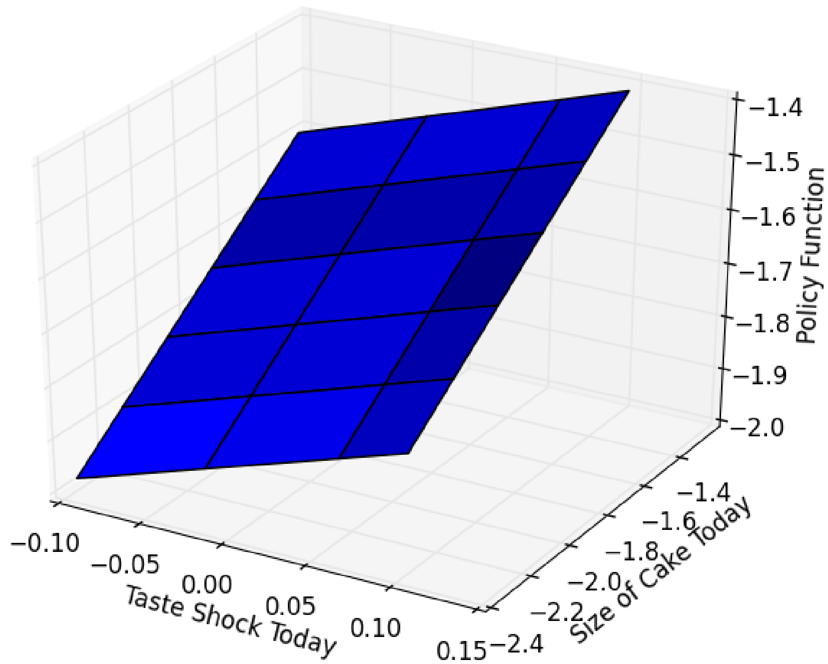
0.26
0.24
0.22
0.20
0.18
0.16
0.14
Policy Function
−0.10
−0.05
0.00
0.05
0.10
0.15
Taste Shock Today
0.05
0.10
0.15
0.20
0.25
0.30
Size of Cake Today


0.26
0.24
0.22
0.20
0.18
0.16
0.14
0.12
Policy Function
−0.10
−0.05
0.00
0.05
0.10
0.15
Taste Shock Today
0.05
0.10
0.15
0.20
0.25
0.30
Size of Cake Today

1.9 6.9



Policy Function
−1.4
−1.5
−1.6
−1.7
−1.8
−1.9
−2.0
Taste Shock Today
−0.10
−0.05
0.00
0.05
0.10
0.15
Size of Cake Today
−2.4
−2.2
−2.0
−1.8
−1.6
−1.4



−1.4
−1.5
−1.6
−1.7
−1.8
−1.9
−2.0
Policy Function
−0.10
−0.05
0.00
0.05
0.10
0.15
Taste Shock Today
−2.4
−2.2
−2.0
−1.8
−1.6
−1.4
Size of Cake Today