

Problem Set #[3]

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Problem 1

Part (a). The first period consumption, c_1 is negative, most possibly resulted from a excessively big b_1 .

Part (b). No constraint is violated.

Part (c). No constraint is violated.

Problem 2

Part (a). See the first column of Table 1 for results. The computations took 0.0028s and 0.0020s respectively.

Part (b). Please see Figure 1.

Part (c).

See the second column of Table 1 for results. All metrics increase except for \bar{r} . As β increases, the agents become more patient towards future rewards, discounting them less. This would lead them to save more as they value the savings in the future comparatively more as they become more patient.

\bar{K} increases because it's the aggregate of all savings. \bar{L} remains unchanged because it's exogenous. The increase in \bar{K} will result in increase in both \bar{r} and \bar{w} because other parameters like A , α and δ remain unchanged.

The consumptions increase because the income effect overshadows the substitution effect, as households' wages increase.

Problem 3

Part (a). Please see Figure 2, Figure 3 and Figure 4 for $\{K_{t=1}^{T+5}\}$, $\{w_{t=1}^{T+5}\}$ and $\{r_{t=1}^{T+5}\}$ respectively.

Part (b). In period 3, the economy first gets to within 0.00001 of the steady state. After period 11, the economy is never again farther than 0.00001 away from the steady state.

Table 1: Steady State Results for Varying β s

Output	$\beta = 0.195$	$\beta = 0.55$
b_2	0.019	0.028
\bar{b}_3	0.058	0.077
\bar{K}	0.078	0.105
\bar{L}	2.2	2.2
\bar{w}	0.202	0.224
\bar{r}	2.433	1.886
\bar{c}_1	0.182	0.196
\bar{c}_2	0.210	0.229
\bar{c}_3	0.241	0.267

Figure 1: Steady-State Distribution of Consumption and Savings by Age

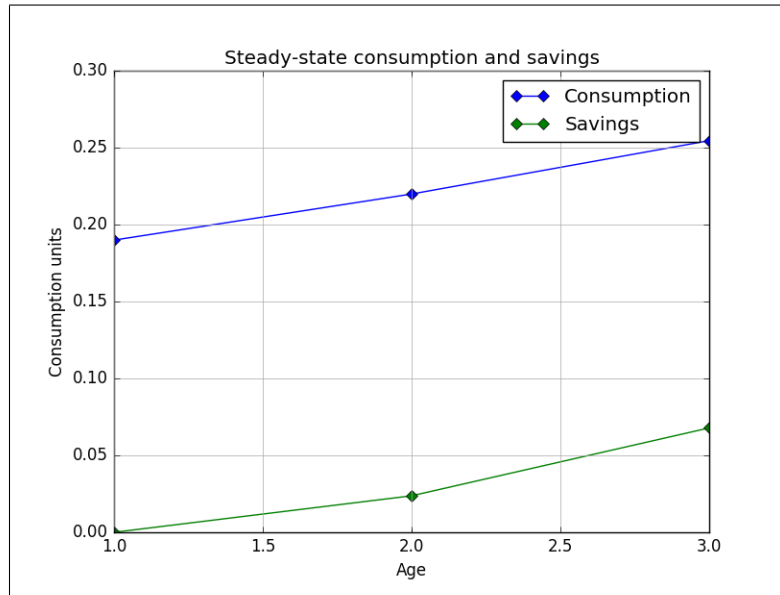


Figure 2: $\{K_{t=1}^{T+5}\}$

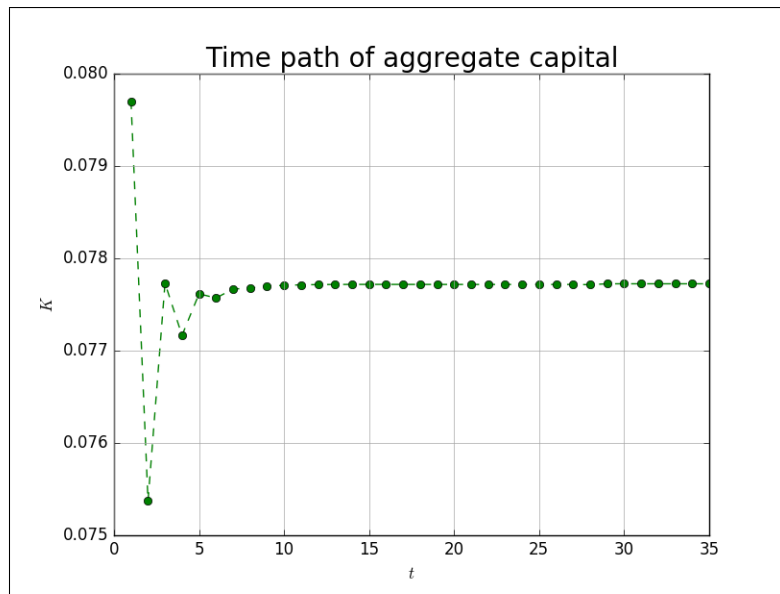


Figure 3: $\{w_{t=1}^{T+5}\}$

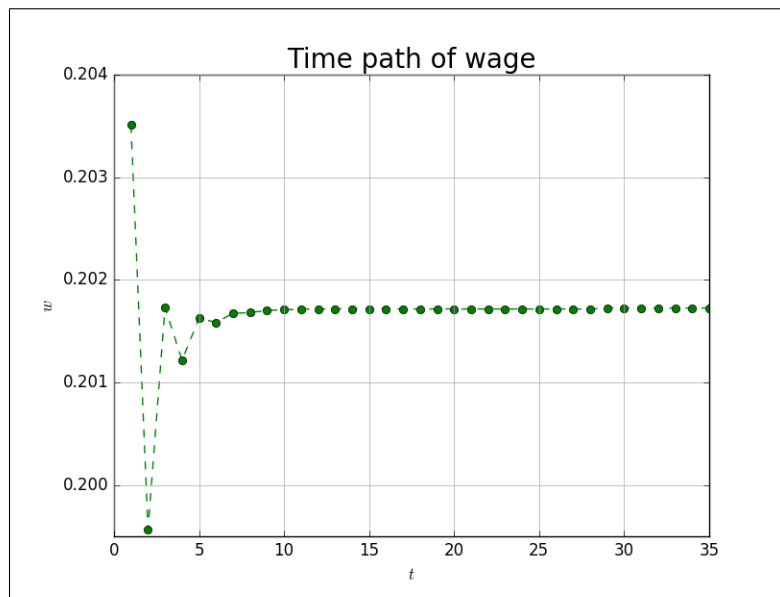


Figure 4: $\{r_{t=1}^{T+5}\}$

