Exercise 3 ((7.5 points)Change in the Saving Rate). Consider an economy like in Solow model I, with a constant population and a constant level of technology ($L_t = L$ and $A_t = A$). Suppose that in period 1 the economy is in steady state. In period 2, the government implements a subsidy on saving that increases the saving rate σ from 10 percent to 20 percent. Calculate the growth rates of output per capita, capital per capita, and consumption per capita between periods 1 and 2 . Explain.

Exercise 4 ((7.5 points) The Golden Rule). Suppose that the production function is of the form $y_t = 2\sqrt{k_t}$, where y_t denotes output per capita and k_t denotes capital per capita. Suppose that population and technology are constant (Solow model I). Assume further that the depreciation rate, δ, is 10 percent. Suppose that the saving rate, σ, is the one associated with the golden rule. Calculate the steady-state levels of capital per capita, k^*, output per capita, y^*, and consumption per capita, c^*.

Exercise 5 ((7.5 points) Technological Progress). In one country the production function is $Y_t = A_t K_t^\alpha L_t^{1-\alpha}$. In another country the production function is $Y_t = K_t^\alpha (E_t L_t)^{1-\alpha}$. The parameter $\alpha \in (0,1)$ is the same in both countries. Suppose that the two countries are on a balance growth path, that output per capita grows at the same rate in both countries, that E_t grows at 3 percent. and that A_t grows at 1 percent. Find α.

Exercise 6. (Growth Accounting).

	Hong Kong	Singapore	South Korea	Taiwan
$\Delta \ln(Y_t/L_t)$	4.7%	4.2%	5.6%	5.4%
$\Delta \ln A_t$	2.3%	0.2%	1.7%	2.1%
$1 - \alpha$	0.63	0.50	0.70	0.74

Notes. First two rows are annual growth rates from 1966 to 1990. Source: A.Young (QJE, 1995).

Suppose the production function is $Y_t = A_t K_t^\alpha L_t^{1-\alpha}$. Based on the information provided in the table:

1. (7.5 points) Infer the average growth rate of the capital-output ratio, $\Delta \ln(K_t/Y_t)$, in Hong Kong.

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2. (7.5 points) Infer the average growth rate of the real rental rate of capital, $\Delta \ln(U_t/P_t)$, in Hong Kong.

END OF EXAM