

Original

Examination:

Macroeconomic Analysis
(No. 1428)

Semester:

Summer Semester 2003

Examiner:

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The following aids may be used:

None.

Examination Questions:

Consider a perfectly competitive economy with households, firms and a government. Households maximize

$$\int_0^{\infty} u[c(t), l(t), m(t)] e^{-\rho t} dt,$$

with

$$u(c, l, m) = \ln c - \alpha \ln l + \beta \ln m,$$

subject to a budget constraint

$$\dot{M} + \dot{B}_g + \dot{B}_f = i_g B_g + i_f B_f + Wl - Pc - T_h$$

when B_g , B_f are nominal values of government and corporate bonds, respectively, held by the households; T_h denotes the nominal value of (lump-sum) taxes; \dot{M} is the change in nominal money balances ($m=M/P$).

The firms produce with an unchanging technology employing capital and labor, described by a Cobb-Douglas function. Their gross profit (revenue minus labor costs) is taxed at a constant tax rate $0 < \tau < 1$. They finance their investment by issuing corporate bonds, there are not any equity shares outstanding at $t=0$. Investment does not involve installation costs. Managers maximize the firms' value. At $t=0$ the capital stock is $K(0)=K_0$.

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The government budget constraint is

$$\dot{M} + \dot{B}_g = i_g B_g + Pg - T_h - T_f,$$

where \dot{M} is the issue of (nominal) money, g is real government consumption, and T_f is nominal corporate tax revenue. Assume that the government's monetary policy implies a constant growth rate of M over the whole time period. $T_h(t)$ is indexed to the price level $P(t)$. The government starts with initial values $M(0)=M_o$, $B_g(0)=B_o>0$.

1. Describe the dynamics of real capital and private consumption in a perfect foresight equilibrium.
2. How does the "consumption function" of the household sector look like if
 - a) the households are not aware of the government's intertemporal budget constraint?
 - b) they take the government's budget constraint into account?
3. Describe the stationary state of the economy in terms of model parameters and exogenous variables.
4. Analyse the consequences of an increase in
 - a) government consumption g ,
 - b) the corporate tax rate τ ,
 - c) the constant growth rate of M

for the stationary state (in particular the capital stock and real private consumption). Sketch graphically impact effects and adjustment paths.

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