Department of Economics, UCLA
International Finance (Econ 281B)
Winter 2005
Prof. Carlos A. Végh

FINAL EXAM

This is a closed-book, three-hour exam. The points corresponding to each question (which add up to 180 points) are indicated in parentheses.

1. True, false, or uncertain (50 points)

Indicate whether you consider each of the following statements to be TRUE, FALSE, OR UNCERTAIN. In each case, give a BRIEF explanation of your answer. (Your grade will depend heavily on your explanation.)

1. In a small open economy with capital account restrictions, a temporarily lower level of output will be associated with a trade deficit and a lower domestic real interest rate.

2. The more permanent a productivity shock, the more likely that it will lead to a large increase in the current account.

3. High costs of default may be welfare improving.

4. The result derived by Harberger, Laursen, and Metzler in 1950 is consistent with an intertemporal model of the current account.

5. Intertemporal price speculation refers to the idea that changes in the intertemporal price of consumption leads to changes in consumption.

6. The idea behind the so-called "twin deficits" is that when the trade balance is in deficit, the current account balance will also tend to be in deficit.

7. The monetary approach to the balance of payments predicts that an excess demand for money will lead to a current account deficit.

8. From a theoretical point of view, a devaluation can be either expansionary or contractionary.

9. The reason why there is no overshooting in Handout # 7 (the model with sticky prices) is that Handout # 7 assumes equilibrium in the money market and Dornbusch (in his *JPE* overshooting paper) does not.

10. In a monetary model, higher nominal interest rates will always reduce consumption.

2. Anticipated money shocks (60 points)

Consider the following model of a small open economy perfectly integrated with the rest of the world in both goods markets (i.e., law of one price holds and foreign price is one) and capital markets (i.e., interest parity holds).

- Preferences:
$$\int_0^\infty [u(c_t) + \gamma_t v(m_t)]e^{-\beta t}dt, \tag{2.1}$$
where c is consumption, m are real money balances, and γ_t is a money demand shock

- Flow constraint:
$$\dot{a}_t = ra_t + y + \tau_t - c_t - i_t m_t,$$
where $a(\equiv m + b)$ denotes real financial assets (b are net foreign bonds), r is the constant world real interest rate, y is the constant endowment of the good, τ_t are lump-sum transfers from the government, and i_t is the nominal interest rate. (Assume $\beta = r$.)

- Intertemporal constraint:
$$a_0 + \int_0^\infty (y_t + \tau_t)e^{-rt}dt = \int_0^\infty (c_t + i_t m_t)e^{-rt}dt.$$

- Government's budget constraint:
$$\dot{h}_t = rh_t + \frac{\dot{M}_t}{P_t} - \tau_t,$$
where h are international reserves at the central bank and M is the nominal money supply.

- Current account:
$$\dot{k}_t = rk_t + y - c_t,$$
where $k_t \equiv h_t + b_t$.

- Resource constraint:
$$k_0 + \frac{y}{r} = \int_0^\infty c_t e^{-rt} dt. \tag{2.2}$$
Consider a perfect foresight equilibrium path along which the path of γ_t is given by
$$\gamma_t = \begin{cases} \gamma^H & 0 \leq 0 < T, \\ \gamma^L & t \geq T. \end{cases} \tag{2.3}$$
where $\gamma^H > \gamma^L$. In other words, γ_t is high until T and then falls at T. Think of this as an anticipated negative money demand shock at T. Given this path of γ_t, analyze the following cases:

  1. Suppose that the economy is operating under predetermined exchange rates and that the rate of devaluation is constant over time. Derive the path of all endogenous variables (and plot them against time). Discuss the intuition behind the results.
  2. Suppose that the economy is operating under flexible exchange rates and that the rate of money growth is constant over time. Derive the path of all endogenous variables (and plot them against time). Discuss the intuition behind the results.
  3. How do the results under predetermined and flexible rates differ, if at all? Discuss the economic intuition behind this comparison.

3. Devaluation in a sticky-prices model (70 points)

This exercise deals with Handout # 7 (the model with sticky prices). In handout # 7 we solved the model for the case of flexible exchange rates. This exercise asks you to solve for the case of predetermined exchange rates and then analyze the effects of (i) a permanent devaluation and (ii) a permanent *reduction* in the rate of devaluation (i.e., an exchange rate-based stabilization).

Consider a small open economy perfectly integrated with the rest of the world in both goods markets (i.e., law of one price holds and foreign price is one) and capital markets (i.e., interest parity holds).

- Preferences:

$$\int_0^\infty [\log(c_t^T) + \log(c_t^N) + \log(m_t)]e^{-\beta t}dt, \tag{3.1}$$

where c_t^T and c_t^N are tradables and non-tradables, respectively, and m_t denotes real money balances (i.e., in terms of tradable goods).

- Consumer's flow constraint:

$$\dot{a}_t = ra_t + y_t^T + \frac{y_t^N}{e_t} + \tau_t - c_t^T - \frac{c_t^N}{e_t} - i_t m_t, \tag{3.2}$$

where $a(\equiv m + b)$ denotes real financial assets (b are net foreign bonds), y_t^T and y_t^N denote output of tradable and non-tradable goods, respectively, τ_t are lump-sum transfers from the government, e_t is the real exchange rate (defined as the relative price of tradable goods in terms of non-tradable goods), and i_t is the nominal interest rate. (Assume $\beta = r$.)

- Consumer's intertemporal constraint:

$$a_0 + \int_0^\infty (y_t^T + \frac{y_t^N}{e_t} + \tau_t)e^{-rt}dt = \int_0^\infty (c_t^T + \frac{c_t^N}{e_t} + i_t m_t)e^{-rt}dt. \tag{3.3}$$

- Supply side. Output of tradable goods is assumed constant over time. Prices of non-tradables are sticky and are modeled a la Calvo (1983). Output of non-tradable goods is demand-determined. The rate of change of inflation of non-tradable goods obeys the following equation:

$$\dot{\pi}_t = -\theta(y_t^N - \bar{y}^N), \qquad \theta > 0, \tag{3.4}$$

where $\bar{y}^N$ is the full-employment level of non-tradables output.

- Government's flow constraint:

$$\dot{h}_t = rh_t + \dot{m}_t + \varepsilon_t m_t - \tau_t. \tag{3.5}$$

where h_t are international reserves and ε_t is the rate of devaluation.

- Current account:
$$\dot{k}_t = rk_t + y^T - c_t^T,$$
where $k_t \equiv h_t + b_t$.

- Resource constraint:
$$k_0 + \frac{y^T}{r} = \int_0^\infty c_t^T e^{-rt} dt. \tag{3.6}$$

In the context of this model:

1. Analyze the effects of an unanticipated and permanent devaluation (i.e., an increase in the level of the exchange rate). Discuss the intuition behind the results. How do results compare with those of a devaluation in the world of Handout # 5?

2. Analyze the effects of an unanticipated and permanent reduction in the rate of devaluation (i.e., a permanent exchange rate-based stabilization). Discuss the intuition behind the results. What real-world scenario would this exercise apply to?