

# Problemset 6

## International Macroeconomics (Master)

Prof. Dr. Hoffmann  
Chair of International Trade and Finance  
University of Zurich

Spring Semester 2021

### Exercise 1: Shocks and the Current Account

Assume the following underlying process for net output,

$$NO_{t+1} - \overline{NO} = \alpha (NO_t - \overline{NO}) + \epsilon_{t+1},$$

where  $\overline{NO}$  denotes the long-run mean of net output,  $E_t(\epsilon_{t+1}) = 0$  and  $0 < \alpha < 1$ .

(a) Show that net output can also be written as

$$NO_t = \overline{NO} + \sum_{s=0}^{\infty} \alpha^s \epsilon_{t-s}.$$

How does the cyclical or transitory component of net output react to unexpected changes in current net output?

(b) Using your findings from Exercise 1 (b) of Problemset 5, show that consumption follows

$$C_t = rB_t + \overline{NO} + \frac{r}{1+r} \cdot \sum_{s=0}^{\infty} \frac{E_t[NO_{t+s} - \overline{NO}]}{(1+r)^s}.$$

How does consumption react to innovations in current net output?

(c) Using the identity  $CA_t = rB_t + NO_t - C_t$ , prove that

$$CA_t = \alpha \left( \frac{1-\alpha}{1+r-\alpha} \right) (NO_{t-1} - \overline{NO}) + \left( \frac{1-\alpha}{1+r-\alpha} \right) \epsilon_t.$$

How does the current account react to shocks in net output?

(d) Now suppose the following underlying process for net output changes

$$\Delta NO_t = \alpha \Delta NO_{t-1} + \epsilon_t,$$

where  $0 < \alpha < 1$  as before.

- (i) Provide intuition about the persistence properties of the net output process.
- (ii) What changes in your intuition regarding the response of consumption and current account to output innovations in this case?

**Exercise 2:** Intertemporal Approach to the Current Account

In the simplest static Keynesian models of undergraduate macroeconomics texts, higher current income  $Y$  may be associated with a current account deficit as imports rise. Thus, the current account can be countercyclical. Indeed, Emerging Market Economies (EMEs) tend to have current accounts that are negatively correlated with income. Early critics of the intertemporal approach to the current account argued that a major empirical flaw of the approach is its inability to yield countercyclical current accounts. Are they right?