SIMON FRASER UNIVERSITY

Department of Economics

Econ 305   Prof. Kasa

Intermediate Macroeconomic Theory   Fall 2013

PROBLEM SET 4

(Due November 29)

1. (25 points). A common empirical finding is that the trade balance is *countercyclical*. That is, when output rises above trend, net exports decrease (and vice versa). What kind of shocks might cause the trade balance to be countercyclical? Use graphs to illustrate your answer.

2. (25 points). Consider the Diamond-Dybvig model discussed in class and in Chapter 17. There are three periods: 0, 1, and 2. The economy consists of a large number, N, of consumers, each endowed with one unit of a good in period 0. This good can be used as an input in production, but the production process is 'illiquid' in the following sense: If one unit is invested in period 0 then $1+r$ units of the good are produced in period 2. If the production process is interrupted in period 1, then 1 unit is produced in period 1, and nothing more is produced in period 2. To be specific, assume that $r = 3$.

   Consumers have random needs for cash. In particular, with probability t each consumer may need to consume in period 1. With probability $(1 - t)$ a consumer is patient, and will only need to consume in period 2. Initially, in period 0, when investment decisions are made, consumers do not know which type they will be. They do not discover this until period 1. Hence, consumers maximize their <u>expected</u> utility

   $$tU(C_1) + (1 - t)U(C_2)$$

   where C_1 denotes first-period consumption and C_2 denotes second-period consumption. To be specific, suppose that $t = 1/3$ and that the utility function takes the following form,

   $$U(C) = a_0 - \frac{a_1}{C}$$

   where the a_i parameters are positive constants.

   (a) Suppose there is a competiive banking system. As outlined in class, compute the optimal contract (d_1, d_2).

   (b) Explain why this economy is susceptible to bank runs. How large a fraction of people must be expected to withdraw in period-1 before a patient Type 2 person decides to run to the bank?