Recitation 8

1. National savings
   a. Complete the table below!

	Country 1	Country 2	Country 3
Y	$4bn	$8bn	$3bn
C	$2.5bn	$2.5bn	$1.5bn
T	$900M	$2.5bn	$700M
G	$500M	$1.5bn	$700M
Private S	$600M	$3bn	$800M
Public S	$400M	$1bn	0
Total S	$1bn	$4bn	$800M

Y = C + I + G (when closed economy)
Private saving = Y – C - T
Public saving = T – G
Total Saving = I = Y – C – G

2. Interest rates
   a. Determine the interest rate of a $1000 bond that matures in 10 years and has a future value of $3500!

$$3500 = 1000 * (1 + r)^{10}$$
$$3.5 = (1 + r)^{10}$$
$$\sqrt[10]{3.5} = 1 + r$$
$$r = 13.35\%$$

   b. You put $2000 into a savings account with a 3% annual real interest rate. In how many years will you have $3000 in your account? Give your answer in whole years!

$$3000 = 2000 * (1 + 3\%)^N$$
$$1.5 = 1.03^N$$
$$\ln 1.5 = N * \ln 1.03$$
$$N = \frac{\ln 1.5}{\ln 1.03} = 14\ years$$

   c. What is the present value of an investment that will be worth $40,000 in 20 years? The real interest rate on the market is 8%.

$$40000 = x * (1 + 8\%)^{20}$$
$$x = 8581.93$$