EXERCISES SET 7 EXPECTATIONS EXERCIZES FORM CHAPTER 18 OF BLANCHARD

2)

- a) Real interest rate. Because as investors and consumers, we are interested in how much the machine will yield in terms of future real consumption goods.
- b) Nominal rate. Because bonds usually promise to pay back in \$ terms, regardless of inflation variations.
- c) Nominal rate. Because the future payments on a lease are usually determined in \$ terms, regardless of inflation variations.

- a) $1 + r = \frac{1+0.04}{1+0.02} \Rightarrow r = 1.96\%$ (exact) r = 4% - 2% = 2% (approximately)
- b) $1 + r = \frac{1+0.15}{1+0.11} \Rightarrow r = 3.6\%$ (exact) r = 15% - 11% = 4% (approximately)
- c) $1 + r = \frac{1+0.54}{1+0.46} \Rightarrow r = 5.48\%$ (exact) r = 54% - 46% = 8% (approximately)

We see that the approximate method is not very good for high values of inflation, though quite good for low values.

4)

- a) NO. A negative nominal interest rate means that a \$1 bond bought today pays back less than \$1 next year. It would be better to just hold on to the \$1 bill. (Note that this may not be true if a bond deposit provides other benefits than just a return on savings. For instance, it may be safer to deposit the money in the bank than keep it at home and risk theft. In such circumstances, people may be willing to actually pay for the "safety" services, which amounts to a negative nominal interest rate.)
- b) YES. It happens when the inflation rate exceeds the nominal interest rate, since $r = i \pi = -(\pi i) < 0$ if $\pi > i$. A bond yields a real return of $-(\pi i)$ while cash yields a real return of $-\pi$. If i > 0, then $-(\pi i) > -\pi$. It is thus better to hold bonds than cash. Even though the real value of bonds goes down with time when $\pi > i$, the real value of cash goes down even faster.
- c) A negative real interest rate will discourage people from lending money (savers). They will turn to buying real goods instead, since real goods keep their real value (at least those that do not depreciate over time). Potential borrowers (investors with projects)

will then have a difficult time finding lenders. This should drive up the real interest rate, as potential borrowers (investors) will offer higher nominal interest rates to convince savers to lend them their money.

5)

a) In case i), the payment to be received 40 years from now is $2000(1+r)^{40} \times 0.75$. This has present value 2000×0.75 since we divide by $(1+r)^{40}$ in order to get the present value of a dollar 40 years from now. The present value does not depend on the rate of interest.

In case ii), we save 0.8×2000 today, which is obviously equal to the present value of that savings.

b) Alternative ii) is better. In order to encourage people to save more with RRSPs, the tax rate on RRSPs should be lower than today's tax rate, not higher. (NB I'm not sure that this is a very realistic problem. I think that tax rates on RRSPs are effectively lower in Canada because capital income is taxed.)

7)

- a) See text.
- b) Yes, according to box page 367, a 1% increase in the inflation rate is associated with a 1% increase in the nominal interest rate on average.
- c) NO, it does not have to go thru the origin. The vertical intercept represents the natural real interest rate.
- d) This is not exactly true. The Fisher effect is believed to hold in the long run, but not necessarily in the short run. There are many who believe that monetary policy can have some effects in the short run.