Nanyang Technological University
School of Social Sciences

HE2002 Macroeconomics II

Tutorial 12

1. **Chapter 14, Q5.**
   The present value of an infinite stream of dollar payments of z (that starts next year) is \$z/i when the nominal interest rate, i, is constant. This formula gives the price of a consol—a bond paying a fixed nominal payment each year, forever. It is also a good approximation for the present discounted value of a stream of constant payments over long but not infinite periods, as long as i is constant. Let's examine how close the approximation is.

   (a) Suppose that $i = 10\%$. Let $z = 100$ dollars. What is the present value of consol?

   (b) If $i = 10\%$, what is the expected present discounted value of a bond that pays z dollars over the next 10 years? 20 years? 30 years? 60 years?

   (c) Repeat the calculations in parts a and b for $i = 2\%$ and $i = 5\%$.

2. **Chapter 14, Q7**
   Suppose that an investor has a choice between buying a three-year bond with a face value of 60 dollars and a stock paying a constant dividend of 20 dollars per year, which the investor plans to hold for three years. The real interest rate on the stock and the bonds is the same, 5%. In addition, the risk premium on the stock is constant at 10%, while on the bond, it is 5%.

   (a) Compare the present value of the two investments. Which one should the investor choose?

   (b) Imagine that the risk premia on the stock and the bond were to be equalized at 5%. How would that affect the choice made in part a?

   (c) Suppose now that the risk premium returns to its initial value, which is 10% for the stock and 5% for the bond. The interest rate changes each year for both securities: 5% in the first year, 8% in the second, and 12% in the third. How would that affect the investor's evaluation of the two investments? How would you explain your result?