Solution to Homework1

CHAPTER 1

1. Ultimately, it is true that real assets determine the material well being of an economy. Nevertheless, individuals can benefit when financial engineering creates new products that allow them to manage their portfolios of financial assets more efficiently. Because bundling and unbundling creates financial products with new properties and sensitivities to various sources of risk, it allows investors to hedge particular sources of risk more efficiently.

4. Financial assets make it easy for large firms to raise the capital needed to finance their investments in real assets. If Ford, for example, could not issue stocks or bonds to the general public, it would have a far more difficult time raising capital. Contraction of the supply of financial assets would make financing more difficult, thereby increasing the cost of capital. A higher cost of capital results in less investment and lower real growth.

14. Treasury bills serve a purpose for investors who prefer a low-risk investment. The lower average rate of return compared to stocks is the price investors pay for predictability of investment performance and portfolio value.

15. With a "top-down" investing style, you focus on asset allocation or the broad composition of the entire portfolio, which is the major determinant of overall performance. Moreover, top-down management is the natural way to establish a portfolio with a level of risk consistent with your risk tolerance. The disadvantage of an *exclusive* emphasis on top-down issues is that you may forfeit the potential high returns that could result from identifying and concentrating in undervalued securities or sectors of the market.

With a "bottom-up" investing style, you try to benefit from identifying undervalued securities. The disadvantage is that you tend to overlook the overall composition of your portfolio, which may result in a non-diversified portfolio or a portfolio with a risk level inconsistent with your level of risk tolerance. In addition, this technique tends to require more active management, thus generating more transaction costs. Finally, your analysis may be incorrect, in which case you will have fruitlessly expended effort and money attempting to beat a simple buy-and-hold strategy.

CHAPTER 2

2. Money market securities are called "cash equivalents" because of their great liquidity. The prices of money market securities are very stable, and they can be converted to cash (i.e., sold) on very short notice and with very low transaction costs.

4. The spread will widen. Deterioration of the economy increases credit risk, that is, the likelihood of default. Investors will demand a greater premium on debt securities subject to default risk.

7. a. You would have to pay the asked price of:

86:14 = 86.43750% of par = $864.375

b. The coupon rate is 3.5% implying coupon payments of $35.00 annually or, more precisely, $17.50 semiannually.

c. Current yield = Annual coupon income/price

= $35.00/$864.375 = 0.0405 = 4.05%

11. a. At t = 0, the value of the index is: (90 + 50 + 100)/3 = 80

At t = 1, the value of the index is: (95 + 45 + 110)/3 = 83.333

The rate of return is: (83.333/80) − 1 = 4.17%

18. a. Since the stock price exceeds the exercise price, you exercise the call.

The payoff on the option will be: $21.75 − $21 = $0.75

The cost was originally $0.64, so the profit is: $0.75 − $0.64 = $0.11

b. If the call has an exercise price of $22, you would not exercise for any stock price of $22 or less. The loss on the call would be the initial cost: $0.30

c. Since the stock price is less than the exercise price, you will exercise the put. The payoff on the option will be: $22 − $21.75 = $0.25

The option originally cost $1.63 so the profit is: $0.25 − $1.63 = −$1.38

CHAPTER 5

1. The Fisher equation predicts that the nominal rate will equal the equilibrium real rate plus the expected inflation rate. Hence, if the inflation rate increases from 3% to 5% while there is no change in the real rate, then the nominal rate will increase by 2%. On the other hand, it is possible that an increase in the expected inflation rate would be accompanied by a change in the real rate of interest. While it is conceivable that the nominal interest rate could remain constant as the inflation rate increased, implying that the real rate decreased as inflation increased, this is not a likely scenario.

6. a. The “Inflation-Plus” CD is the safer investment because it guarantees the purchasing power of the investment. Using the approximation that the real rate equals the nominal rate minus the inflation rate, the CD provides a real rate of 1.5% regardless of the inflation rate.

b. The expected return depends on the expected rate of inflation over the next year. If the expected rate of inflation is less than 3.5% then the conventional CD offers a higher real return than the Inflation-Plus CD; if the expected rate of inflation is greater than 3.5%, then the opposite is true.

c. If you expect the rate of inflation to be 3% over the next year, then the conventional CD offers you an expected real rate of return of 2%, which is 0.5% higher than the real rate on the inflation-protected CD. But unless you know that inflation will be 3% with certainty, the conventional CD is also riskier. The question of which is the better investment then depends on your attitude towards risk versus return. You might choose to diversify and invest part of your funds in each.

d. No. We cannot assume that the entire difference between the risk-free nominal rate (on conventional CDs) of 5% and the real risk-free rate (on inflation-protected CDs) of 1.5% is the expected rate of inflation. Part of the difference is probably a risk premium associated with the uncertainty surrounding the real rate of return on the conventional CDs. This implies that the expected rate of inflation is less than 3.5% per year.

10. (a) With probability 0.9544, the value of a normally distributed variable will fall within two standard deviations of the mean; that is, between –40% and 80%.