Bonds, derivatives, foreign assets and information.

Q: Explain how in the Grossman model, the quality of the signal influences your investment decision. Also explain how other people's signals are relevant.

A: See the formula list; the correlation between the signal y_i and the price at t=1 (the realised price) describes the quality of the signal; if the correlation is high, the information is good. The demand for the asset is adjusted by a factor depending on the square of this correlation coefficient.
Other investors are asusmed to respond to their respective signals in the same way, affecting their demand. These signals therefore change demand and hence the price. If one assumes that investors are similar enough, the price then conveys information about the average signal, which would be a better signal than that of a single investor.

Q: a) calculate the duration of a bond with a remaining maturity of 3 years, a coupon of 4% and a yield to maturity of 4%.
b) Would the change in price predicted by the duration be larger or smaller than the real price change were the yield to maturity to change to 6%? Explain.

A:
a) The yield-to-maturity and the coupon are equal, hence the current price must be par (face value), which makes this somewhat easier. Let's assume a face value of 1000.

$$D = \sum_{t=1}^{t=T} t \frac{CF_t /(1+y)^t}{P_{Bond}}$$

D= $1*[(40/(1.04)^1)/1000]+ 2*[(40/(1.04)^2)/1000]+ 3*[(1040/(1.04)^3)/1000]=$
(1/1000)*[38.4615+73.9645+2773.6686]=2,886

b) The actual price change would be smaller. The duration gives a linear approximation, while the true relationship is a curve. (NB, this would not be needed at the exam, but the true change is -5.35%, while duration predicts -5.55%

Q: Explain the advantages and disadvantages of investing in foreign assets. Name at least 2 in each category, *and explain why they are relevant*.

A: Advantages:

- diversification benefits. Correlations between markets are usually lower than those within markets. Low correlations help to reduce risk at any given level of return.
- Investing in industries not available domestically, or without the big growth opportunities normally found in emerging martkets. Adding assets with strongly differing characteristics to a portfolio model will improve the risk-reward ratio.
- especially emerging markets have investment possibilities that offer a risk-reward ratio that is unobtainable in more developed markets without employing a lot of leverage. (To botain a return above that of the asset with the highest expected return one needs to go short in the risk-free asset

or even risky assets; foreign assets may give higher returns without the need for shortselling.

Disadvantages:

- Restrictions on shortselling and sometimes even certain long positions in foreign markets reduce the benefits from more diversification (standard portfolio theory results in a lot of short positions)
- Investing in foreign markets opens the door to exchange rate risk; in fact one invests in 2 assets simultaneously: the foreign asset and the currency. Hedging this risk may be costly.