# Flirting: investment and return 

Finance, Investment

## ASSIGN BUSTER

## Risk and Return Flirting With Risk <br> Questions:

1. Imagine you are Bill. How would you explain to Mary the relationship between risk and return of individual stocks? I would explain to Mary that risk and return are positively related, i. e. if one expects to earn higher returns, then one has to be willing to invest in stocks whose price can vary significantly from year to year or in different economic conditions. For example, in the table below we see that treasury bills would have yielded $4 \%$ with almost no variability, while the index fund is expected to yield $10.1 \%$ with a standard deviation of $9.15 \%$
2. Mary has no idea what beta means and how it is related to the required return of the stocks. Explain how you would help her understand these concepts. Beta is defined as the systematic risk of an asset. It measures the relationship between the returns of an asset and a market portfolio. Stocks that vary by more than the market have betas greater than 1 and vice-versa. The formula for calculating beta is as follows: Beta $=$ Covariance of stock returns vis-a-vis market returns. The variance of market returns According to the Security Market Line equation, Required return on a stock $=$ Risk-free rate + (Expected Market Return - Risk-free rate). Beta This shows that high beta stocks have a higher required rate of return than low beta stocks.
3. How should Bill demonstrate the meaning and advantages of diversification to Mary?

Diversification refers to the strategy of investing in stocks, which are not highly correlated with each other, for example, high-tech firms and utility firms, or high-tech firms, and counter-cyclical firms. Diversification reduces the portfolio's variability and thereby enables investors to earn a more stable rate of return. To demonstrate the advantages of diversification, Bill should calculate the expected return and risk (standard deviation) of a portfolio composed of equal investment in the High-Tech Co. and the Counter-Cyclical Co. since these companies are negatively correlated with each other-- and compare the results with the return and risk levels of the High-Tech Co. by itself. The data in the table above shows that a portfolio comprised of equal investment in High-Tech Co. and Counter-Cyclical Co. stock would provide an expected rate of return that would be in between the returns of the two stocks with an expected risk level that would be much smaller than either of the two stocks' expected standard deviation.
4. Using a suitable diagram explain how Bill could use the security market line to show Mary which stocks could be undervalued and which may be overvalued? The solid line represents the required rates of return of the 5 investment alternatives as per the Security Market Line equation. Those stocks whose expected returns are higher than their required returns plot above the line and are considered to be undervalued (Counter-Cyclical Co., Utility Co., and High-Tech Co. ) while those that plot below the line are considered to be over-valued.
5. During the presentation. Mary asks Bill " Let's say I choose a welldiversified portfolio, what effect will interest rates have on my portfolio? How should Bill respond? A well-diversified portfolio is one
that is closely correlated to the market index. Real interest rates are typically inversely related to stock prices. Hence, if interest rates increase, Mary's portfolio return will decrease by as much as the market index does and vice versa. In other words, her portfolio will mirror the changes in the market index.
6. Should Bill take Mary out of investing in stocks and preferably put all hermoneyin fixed-income securities? Explain. Not necessarily. Mary could still invest in a well-diversified portfolio such as the market index fund. The problem with fixed-income securities is that they have reinvestment and price risk. By holding a well-diversified portfolio of stocks, Mary can enjoy a reasonably good rate of return over the long term. Fixed-income securities have been known to barely keep up with inflation.
7. Mary tells Bill, " I keep hearing stories about how people have made thousands of dollars by following their brokers' " hot tips. Can you give me some hot tips regarding undervalued stocks? " How should Bill respond? Bill should discourage Mary from taking speculative positions in common stock, given her age and lifecycle status. He should caution her about the riskiness associated with stock price volatility and remind her again about the advantages of diversification.
8. If Mary decided to invest her money equally in high-tech and countercyclical stocks. What would her portfolio's expected return and risk level be? Are these expectations realistic? Please explain. With equal investments in High-Tech and Counter-Cyclical stocks, the portfolio expected return would be $10.65 \%$ and its expected standard deviation
would be 2. 52\%. (see Answer 3 above for details). These expectations are only as realistic as the numbers used to calculate them. Thus, one has to make realistic assumptions regarding probabilities and returns, in order to get realistic expected return estimates.
9. What would happen if Mary were to put $70 \%$ of her portfolio in the High-Tech stock and 30\% in the Index Fund? Would this combination be better for her? Explain. Given the above table, it seems clear that the 70-30 portfolio composed of High-Tech and the index fund would not necessarily be better for Mary, since it has a much higher expected level of risk (14. 89\% versus 2. 52\%) and only a slightly higher level of expected return (13. 81\% versus $10.65 \%$ ) visa vis the $50-50$ portfolio of High-Tech and the Counter-Cyclical Co.

