

FIN 411 -- Investments

Calculation of ex post investment opportunity sets for Rochester-area stocks, 1983-90

- show the effects of including a high quality corporate bond to the set of possible investments
- show the "efficient set" compared with the location of individual stocks
- show what happens when 1983-86 returns are used to construct an "efficient" portfolio for 1987-90
- show how a "naive" equal-weighted strategy yields reasonable results

Avg Return vs Std Deviation Rochester Stocks, 1983-90

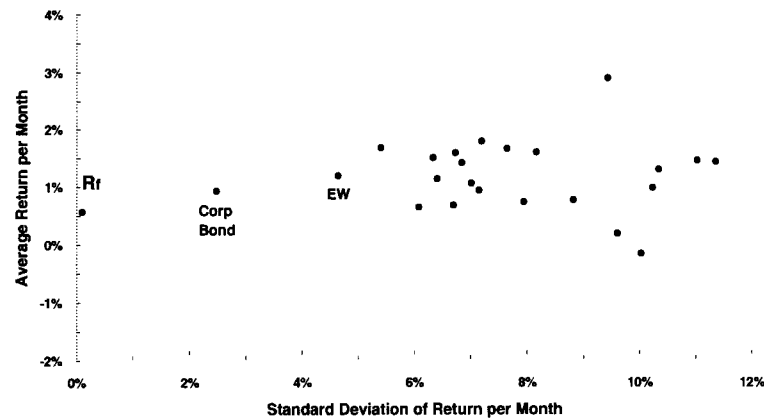
(1) Use 21 stocks' returns to compute ex post efficient set

- i.e., best combinations of mean & std deviation of return to portfolios that could have been achieved by fixed weight portfolios of these stocks -- if weight is < 0 , then short-sell

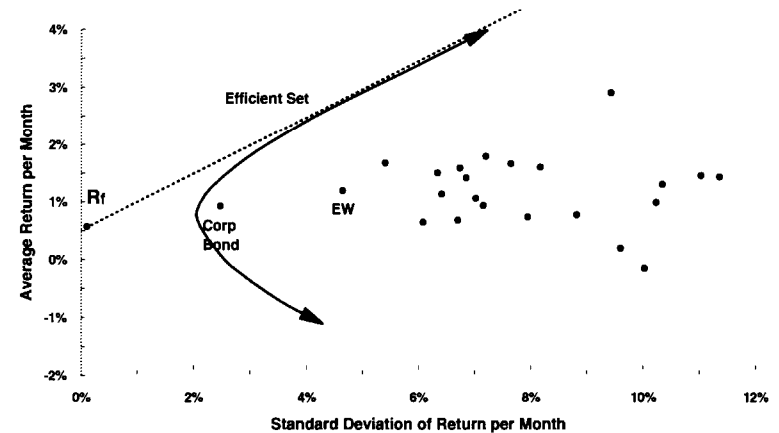
(2) Notice how efficient set shifts to left if you allow people to also buy a high-grade corporate bond

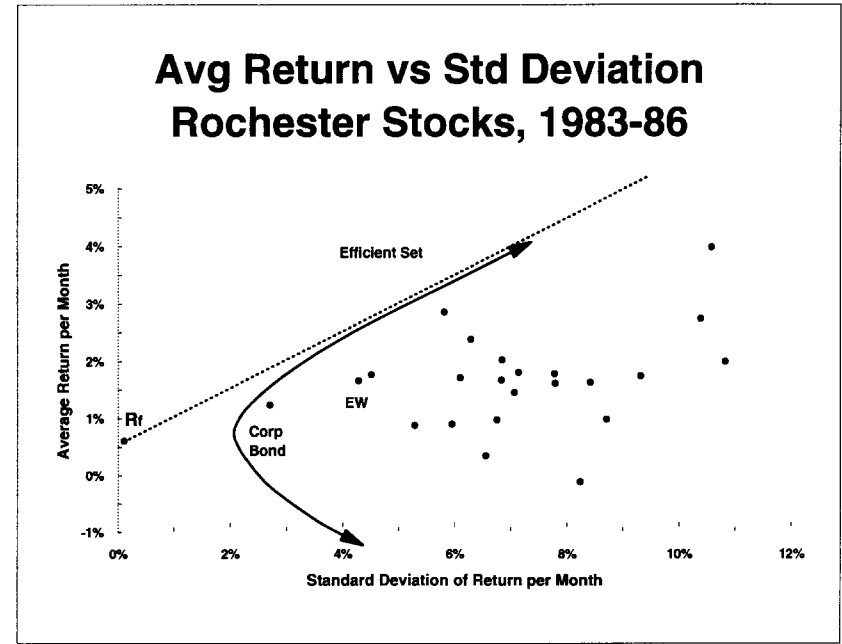
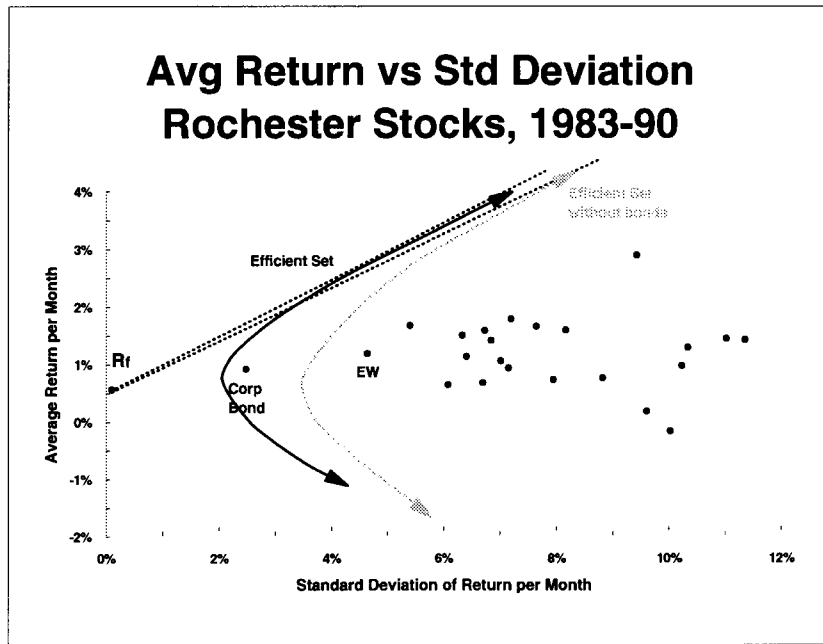
(3) Notice how individual stocks are well to the right of the efficient set -- diversifiable risk

Avg Return vs Std Deviation Rochester Stocks, 1983-90



Avg Return vs Std Deviation Rochester Stocks, 1983-90

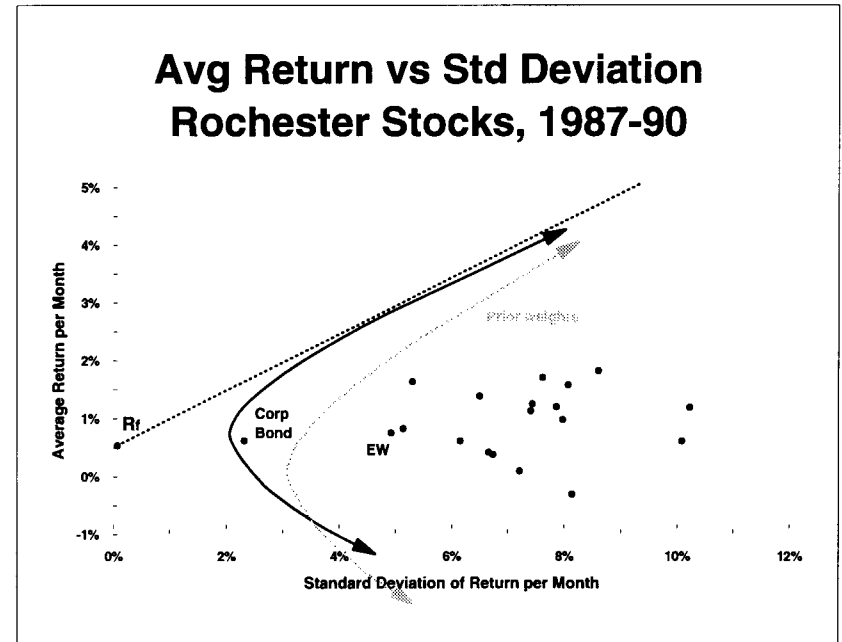




Avg Return vs Std Deviation Rochester Stocks, 1987-90

Note that the portfolio implied by the 1983-86 efficient set is not efficient ex post from 1987-90

- could be estimation error in means and/or standard deviations (highly likely)
- or, it could be that the "true" means & standard deviations changed between subperiods
- equal-weighted stock & bond portfolio (EW) is reasonably efficient

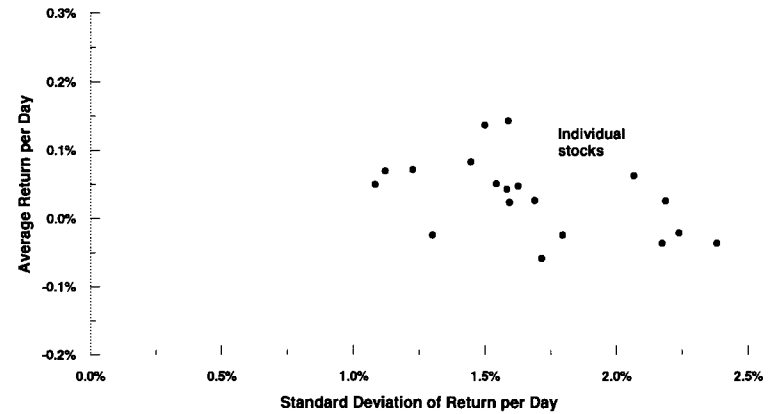


Avg Return vs Std Deviation Rochester Stocks, 1989-91

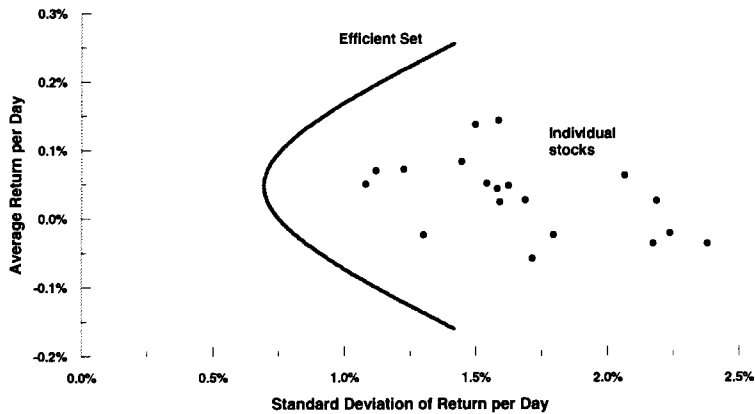
Use daily returns to estimate efficient set for Rochester area stocks (not exactly the same stocks as in the prior examples)

- no Corp Bond return on a daily basis, so this is omitted
- equal-weighted portfolio of all stocks is close to efficient set

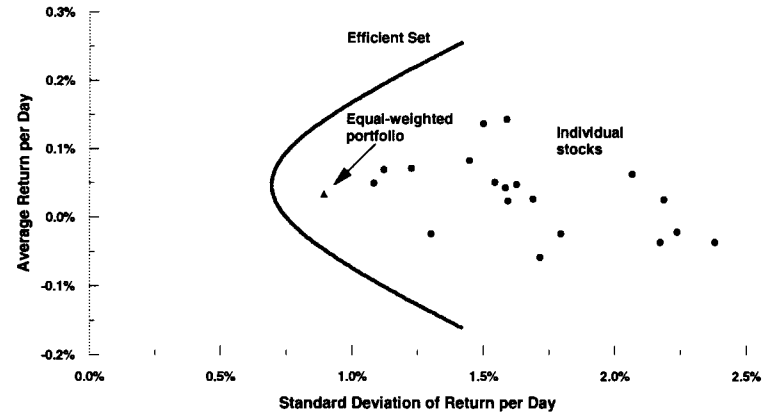
Efficient Set for Rochester Stocks: Daily Returns, 1989-91



Efficient Set for Rochester Stocks: Daily Returns, 1989-91



Efficient Set for Rochester Stocks: Daily Returns, 1989-91



Ex Post Investment Opportunity Sets: Summary

Due to estimation errors in means, standard deviations & covariances of returns, it is probably not worth it to invest resources into calculating "optimal" portfolio weights based on historical estimates of these parameters

- simply spreading money around, e.g., equal-weighted portfolios, achieves most of the benefits of diversification without the costs of computing "optimal" weights

Ex Post Investment Opportunity Sets: Questions

- (1) Why not use all available data to estimate means & covariances?
- (2) What other kinds of information might you use to help you form a well-diversified portfolio?

Ex Post Investment Opportunity Sets: Questions

- (3) Would a portfolio of Rochester-area stocks be well-diversified? Why, or why not?
- (4) Should an employee buy a lot of stock in his/her own company? Why, or why not?