Assignment2 - Linear Factor Model

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1. The intercept coefficient and the slope coefficient of each industry derived from regression analysis

Table 1 Alpha and Beta for ten industries

Industry	Intercept(Alpha)	Slope(Beta)
NoDur	0.369443	0.652647
Durbl	-0.415599	1.648536
Manuf	0.159771	1.169846
Enrgy	0.501719	0.96985
HiTec	-0.06402	1.132969
Telcm	0.194691	0.900729
Shops	0.275492	0.826492
Hlth	0.237841	0.673036
Utils	0.444585	0.538086
Other	-0.387135	1.207309

By regressing the excess industry returns on the excess market returns, the intercept coefficients(alpha), and the slope coefficient(beta) can be derived as above table. For a passive portfolio, alpha usually means wrong pricing, whereas it denotes managers' ability to outperform the market for an active portfolio. Beta implies the asset's sensitivity to systematic risk. The more sensitive an asset is to market risk, the higher beta it has. Therefore, people expect higher return from a high beta asset.

2. Security market line(SML) of betas and returns

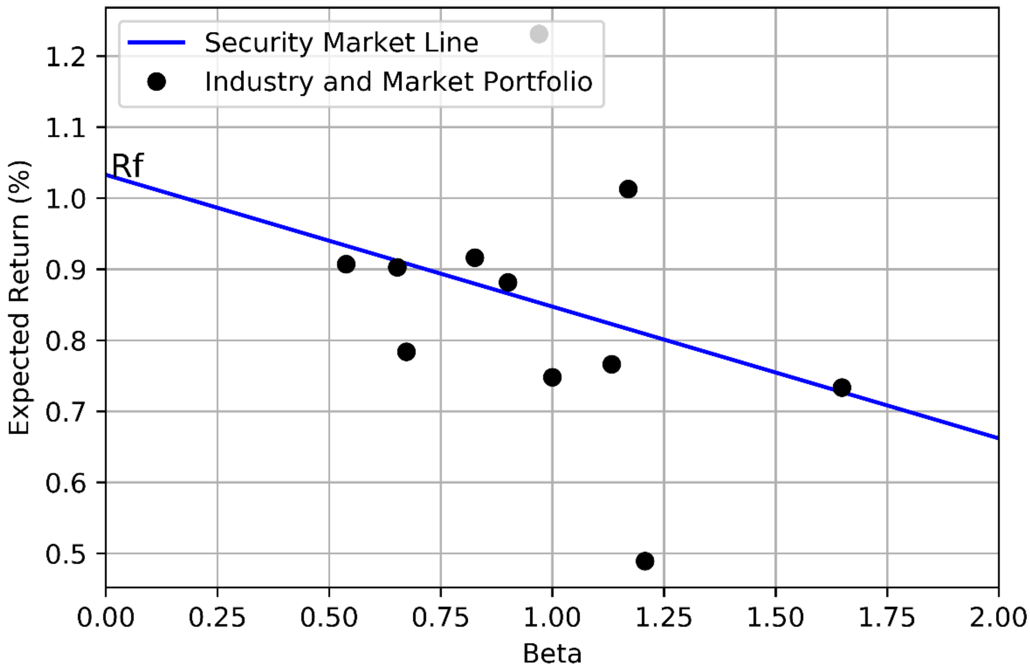
Table 2 Mean return for market and ten industries

	Mean Return
NoDur	0.902833
Durbl	0.733333
Manuf	1.012833
Enrgy	1.231167
HiTec	0.76625
Telcm	0.881417
Shops	0.916333
Hlth	0.783833
Utils	0.907167
Other	0.489083
Market	0.748083

Table 3 Y-intercept and slope for SML

Y-intercept	1.03277
Slope	-0.18547

Figure 1 Security Market Line



The SML represents the relationship between beta and expected return. The y-intercept is risk-free rate, whereas slope is the market premium. Even though it's heading downward in this example, it has a positive slope in usual situations. A steep upward linear curve means that the risk premium is high. SML is very useful to identify undervalued and overvalued assets. If an asset is plotted above the line, it is undervalued, because investors can enjoy greater return than the market average. On the other hand, an asset below the line is overvalued, giving smaller return to the investors than the market expectation.