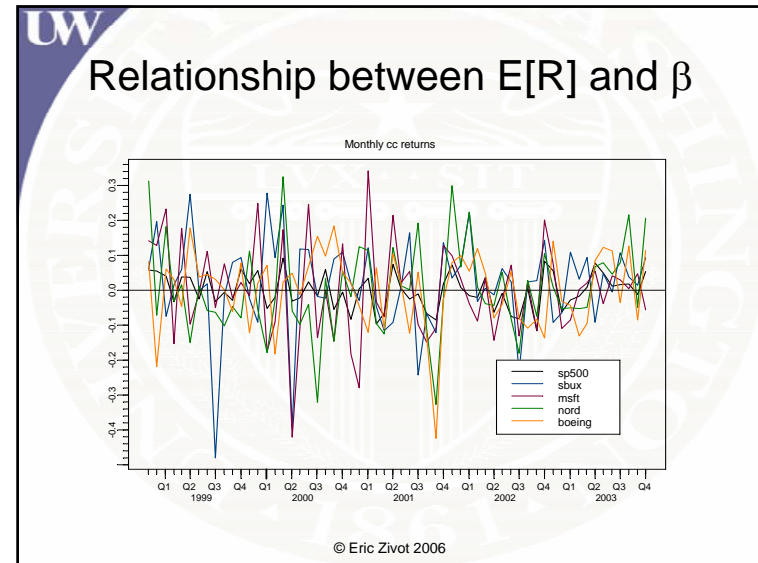


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# Single Index Model and Efficient Portfolios

Econ 424  
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**Tangency Portfolio (computed in S-PLUS) using  $r_f = 0.01/12$**

Portfolio expected return: 0.023903  
 Portfolio standard deviation: 0.17149  
 Portfolio Sharpe Ratio: 0.13452  
 Portfolio weights:

sbux	msft	nord	boeing
1.3079	-0.5003	0.1604	0.0319

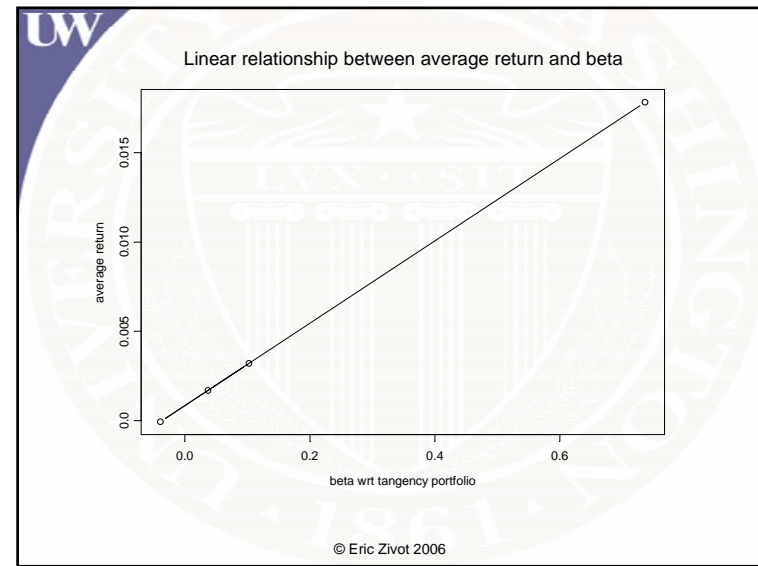
**Beta values computed from SI regression  $R_i = \alpha_i + \beta_i R_{tan} + e_i$**

sbux	msft	nord	boeing
0.73618	-0.038882	0.10269	0.037027

**Average returns on four assets**

sbux	msft	nord	boeing
0.017817	-0.000063638	0.0032024	0.0016875

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Regression of average returns on beta

$$\hat{\mu}_i = \gamma_0 + \gamma_1 \hat{\beta}_{i,\text{tan}} + \eta_{it}$$

```
Coefficients:
              Value Std. Error   t value   Pr(>|t|)
(Intercept) 1.0000e-003 0.0000e+000 7.4306e+014 0.0000e+000
beta.vec    2.3000e-002 0.0000e+000 7.6649e+015 0.0000e+000
```

```
Residual standard error: 1.86e-018 on 2 degrees of freedom
Multiple R-Squared: 1
```

**Note: Estimated coefficients are**

```
(Intercept) beta.vec
0.00083333 0.023069
```

**Risk-free rate and risk premium on tangency portfolio**

```
> 0.01/12
[1] 0.00083333
> tan.port$er - 0.01/12
[1] 0.023069
```

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