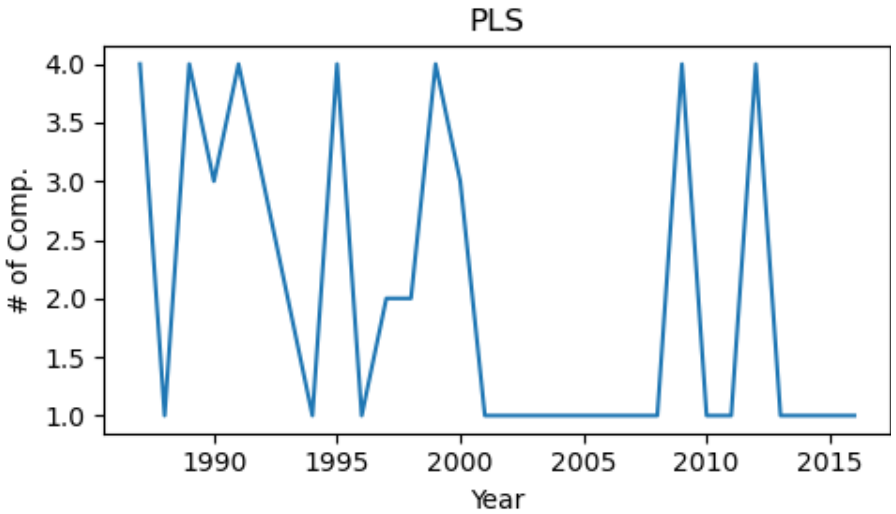
Partial Least Squares (PLS)

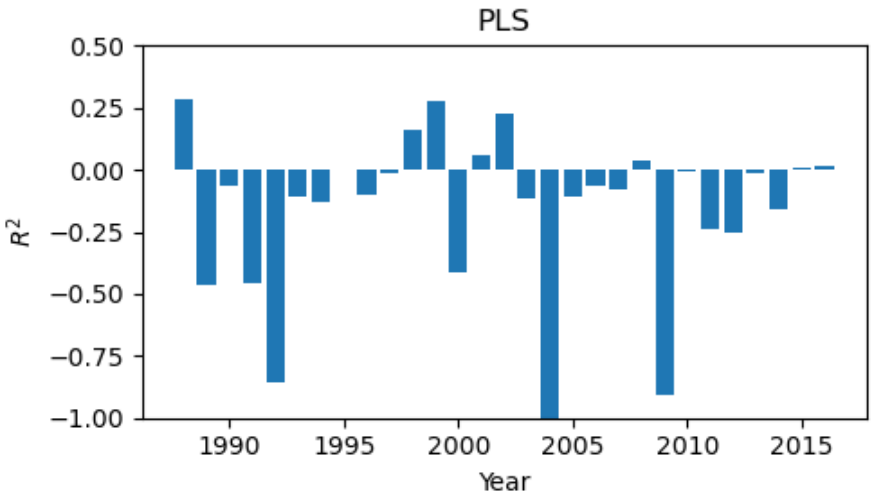
PLS looks for K-dimensional projections of Z that **maximize predicative association with the final target R**, so the j^{th} linear combination solves

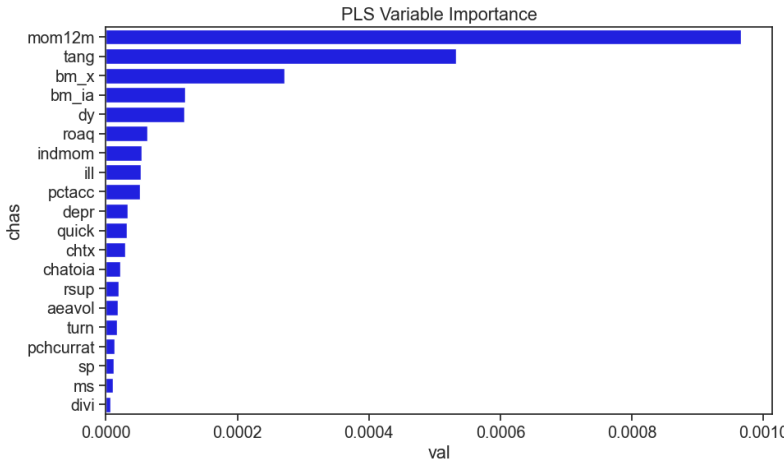
$$\omega_j = argmax_{\omega} Cov^2(R, ZW)$$

s.t.

$$\omega'\omega = 1, cov(Z\omega, Z\omega_l) = 0, l = 1, 2, \ldots, j-1.$$







Elastic Net

$$\min_{\theta} \quad \mathcal{L}(\theta) + \phi(\theta; \cdot)$$

where $$\phi(\theta; \lambda, \rho) = \lambda(1-\rho)\sum_{j=1}^{p}|\theta_j| + \frac{1}{2}\lambda\rho\sum_{j=1}^{P}\theta_j^2$$

Experiments: λ={1, 0.1, 0.01}; ρ={0.5, 0.3, 0.1}.