Question 4

(a)[3points] Write the R code to replicate Figures 15.1 and 15.2 in Cochrane, 2009. Note that these figures use monthly data from 1926 to 1998. Display the two figures you have produced with your R code.What do these Figures tell us about the CAPM?

Reproduce the following graphs from Cochrane, 2009

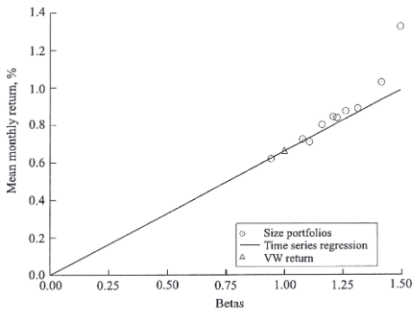

Figure 15.1. *Average excess returns vs. betas on CRSP size portfolios, 1926–1998. The line gives the predicted average return from the time-series regression, $E(R^e) = \beta E(R^{em})$.*

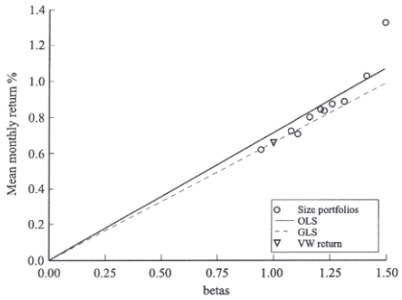

Figure 15.2. *Average excess returns vs. betas of CRSP size portfolios, 1926–1998, and the fit of cross-sectional regressions.*

(a) A subfigure

(b) A subfigure

Figure 1: A figure with two subfigures

Replication of 15.1 time series regression $E(R^e) = \beta E(R^{em})$. Set-up of regression analysis:

- download value weighted, size sorted portfolio returns
- filter data on 1926-1998 time frame
- for each decile calculate average excess return
- for each decile, regress Re-Rf on Rm-Rf