Homework 4: Principles of Finance
Due Nov 25th before the lecture

1. Watch: 货币崛起 The Ascent of Money (2008) and 华尔街 (2010) 十集大型纪录片《华尔街》

2. **CAMP (All the graphs need to use the same range on both axes)**

USA data:
(http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)
See data from Kenneth French's website: (1) "**Fama/French 5 Factors**": **monthly** return data for the Fama-French factors (196307-201809) (7 columns of data, month, rm, sml, hml, rmw, cma, rf); (2)" **25 Portfolios Formed on Size and Book-to-Market (5 x 5)**": Average Value Weighted Returns **monthly** data for 25 portfolios formed on size and book-to-market, 192607-201809. Note, missing values are indicated by -99.99 or -999; replace these by 0. Combine the two data sets together to do the questions below.

(a) Focus on the period 196307-198412 only. Calculate the excess return for 25 portfolios and estimate time-series regressions of the 25 portfolio excess returns on the market excess return. (25 regression results; 25 betas).
(b) Continue with (a). Calculate the means of the predicted expected excess return (predicted EER=β_i [E(r_M) - r_f])) and **actual** excess return (ER) for 25 portfolios on the period 196307-198412; then plot a scatter graph (25 points): means of actual ER against means of predicted EER from CAPM. Does the predicted values are same as the actual ones? Add a trend line to see if the slope is equal to 1.
(c) Continue with (b). Plot a scatter graph and add the security market line: the means of the **actual** excess return against the β_i for 25 portfolios. Does CAPM appear to hold for this period?
(d) Repeat part (a)-(c) for the period 198501-200812. What do you find? What's the difference compared with results for the period 196307-198412?
(e) Repeat part (a)-(c) for the period 200901-201809. Any difference compared with earlier results (d)?
(f) Now go back to 196307-198412, and estimate time-series regressions of the 25 portfolio excess returns on the 3 Fama-French factors. Calculate the means of the predicted expected excess return (predicted EER=β_i [E(r_M) - r_f]+ β_{i2} r_{sml}+ β_{i3} r_{hml}) and actual excess return (ER) for 25 portfolios on the period 196307-198412; then plot a scatter graph (25 points): means of actual ER against means of predicted EER from 3 FF model.
(g) Now go back to 196307-198412, and estimate time-series regressions of the 25 portfolio excess returns on the 5 Fama-French factors. Calculate the means of the predicted expected excess return (predicted EER=β_i [E(r_M) - r_f]+ β_{i2} r_{sml}+ β_{i3} r_{hml} +β_{i4} r_{rmw}+ β_{i5} r_{cma}) and actual excess return (ER) for 25 portfolios on the period 196307-198412; then plot a scatter graph (25 points): means of actual ER against means of predicted EER from 5 FF model.

(h) Compare (b), (f) and (g), which model does fit the data better? Give your simple reasons.

(i) See Chinese data 200801-201809. RESSET 锐思数据库 from Tsinghua library http://www1.resset.cn:8080/product/common/main.jsp

(1) 指数月收益 IDXMONRET 里的 000001 上证指数，monthly return data (200801-201809); (2) "Fama-French 股票组合月收益率 PMONRET_FF"(25 Portfolios Formed on Size and Book-to-Market (5 x 5)：25 个资产组合)，choose 6 variables: 交易所标识_Exchflg=0， 市场标识_Mktflg==A,规模标识_Sizeflg，账面市值比标识_BMflg，日期_Date，资产组合月收益率__流通市值加权_Pmonret_tmv. Repeat part (a)-(c). Do USA data or Chinese data fit CAPM better?