Empirical Asset Pricing

1. **CAPM, conditional asset pricing, and ICAPM**

   (a) Fama and French (1992, "The cross-section of expected stock returns", Journal of Financial Economics). Which CAPM prediction do they test? (Be precise)

   (b) What are the major empirical failures of the CAPM?

   (c) An alternative approach to multi-factor models to solve CAPM anomalies is represented by conditional versions of the CAPM. For example, Lettau and Ludvigson (2001, "Resurrecting the (C)CAPM...", Journal of Political Economy) propose to use CAY as a conditioning variable. The following steps should lead you through the derivation of Lettau and Ludvigson's approach:

      i. Start from the stochastic discount factor pricing equation

      $$E_t\left[\left(R_{t+1}+1\right)M_{t+1}\right]=1$$

      Let the stochastic discount factor have a one-factor representation, with time-varying coefficients

      $$M_{t+1}=a_t+b_t f_{t+1}$$

      where f_{t+1} is the return on the factor. Assume that a risk-free rate exists, and show that time-variation in b_t is linked to time-variation in the risk premium on the factor.

      ii. Describe in formulas how you can move from a conditional asset pricing model to an unconditional one by assuming that the coefficients of the discount factor can be predicted using state variables (that is, CAY in the case of Lettau and Ludvigson).

   (d) How do Lettau and Ludvigson test their conditional model? Be precise in describing the testing procedure.

   (e) What is Lewellen and Nagel's (2005, "The Conditional CAPM does not explain Asset Pricing Anomalies") criticism of the Conditional CAPM literature? Briefly describe their results.

   (f) How do Lewellen and Nagel explain the apparent success of Lettau and Ludvigson's approach? Be precise.

   (g) Bad beta and Good beta

      i. What are the good and bad betas?

      ii. Provide an economic motivation for the empirical link between the bad and good betas and average returns on B/M sorted portfolios

      iii. Could Lewellen and Nagel's critique be applied to the bad beta and good beta results? Refer to estimates reported in the paper.

2. **Predictability**

(a) What is the "excess volatility puzzle"?

(b) "Neither dividend growth nor future returns are predictable using the dividend yield". Do you agree with this statement? How does the forecasting horizon affect the correctness of this statement?

(c) How could one rationalize the fact that $d - p$ predicts future dividend growth with the negative sign?

(d) Why does the coefficient on D/P in predictive regressions increases with the return forecasting horizons?

(e) What is the effect of using price-scaled variables on the statistical properties of the estimators in predictive regressions? Briefly explain.

(f) What is the best predictor of excess returns over the business cycle? What are the potential explanations of this predictive power? Describe in detail at least two of them.

(g) Out-of-sample predictability. Is it the ultimate test for a predicting variable? Why yes? Why not? Explain.

(h) What evidence supports behavioral explanations of return predictability? Describe some empirical results. Can this evidence be enough to explain why price-scaled variables predict returns?

(i) In a few words, what is the "equity premium puzzle"?