Final Exam Review

Examples from past finals (2007, 2008 and 2009) or problem sets in brackets

1. Model selection
    a. t-test for single variable added
    b. F-test for group of variables added [2007#4][2008#2b] [2009#3d]
    c. Adjusted R-squared when comparing different groups of variables (*if* LHS var is same)
    d. Method for comparing models with y versus log(y) [2008#3d]
    e. Estimate sub-samples separately or pooled? Chow Test [2007#2b] [2008#3c]

2. Predictions & Confidence Intervals
    Difference between prediction for specific individual and prediction for average given a set of characteristics

3. Dummy Variables
    a. Interpret dummy variable relative to excluded category [2007#7cd]
    b. Include categorical variables using set of dummies only [2007#2a] [2008#3b]
    c. Interaction terms [2007#3] [2008#3a][Pb #5 3c]
        i. These allow *effect* of variable A to vary according to variable B
            1. Ex (B is binary): different effect of A according to sub-sample
            2. Ex (B is continuous): different effect of A according to value of B
        ii. Both variables in interaction term are always included individually as well
        iii. Find effect of any variable by summing all relevant terms' effects [2008#4]
    d. Difference in difference estimator [2007#10] [2008#5] [2009#5]
        i. Requires at least repeated cross-sectional data
        ii. Four cross-categories of Treatment & Control, before & after
        iii. Use dummies and interactions to separate each category
        iv. Know which is the treatment effect (use table if needed)
        v. Key assumption of common trends

4. Panel Data Estimation
    a. Same individuals over many times (use *it* subscripts) [2008#8a]
    b. Fixed effects [2009#6] [2007#7] [2008#8]
        i. Control for trends over time with year dummies
        ii. Control for time-constant characteristics of individuals (observed & unobserved)
        iii. Interpret dummies as relative to excluded category (yr or indiv.)
        iv. Interpret parameter of interest: on average, for a given *i* in a given *t*, change in x leads to predicted change in y
        v. Only source of OVB now time-variant individual characteristics that are left in u

5. Binary dependent variables
    a. Linear Probability Model [2009#4] [Pset 6#1abc]
    b. Probit & Logit [Pset 6 #1] [2008#7] [2009#7]
        i. Interpretation of marginal effects
        ii. Likelihood Ratio test [Pset6 #1g]

6. Time series
    a. Differences with cross section
        i. Level of observation
        ii. Random sample?
        iii. Independence of observations
        iv. What is question of interest?
    b. Distributed lag model
        i. For slow-acting effects or lingering effects
        ii. Include lags based on how long effect is expected to last
        iii. Short run vs. long run effects
    c. Regression between 2 variables with time trends [Pset6 #3]
        i. Issue of spurious correlation
        ii. Methods: control for time directly; use first-difference
    d. Seasonality
        i. Dummies for cycle indicator [2007#8] [Pset6#5]

Don't forget to review the material listed on "Midterm Review Topics" from the first half of the semester too. All questions from the posted past finals that are not referenced above are related to pre-midterm material. Exceptions are the following (i.e. what you would likely *not* see this year):

From [2007: #5] [2007#9] [2008#6] [2009 #8]

In 2007 and 2008, we used the Stata command `dprobit`, which combine the output of `probit` and `mfx`. We also used the probit rather than the logit in class, but there is no difference in the use of probit or logit.

Be careful & thorough with your answers:

- Always discuss sign, significance and size (numerical and economic importance)
- Discuss heterogeneity of effect if relevant (this is when marginal effects are not constant either because of the functional form or because of interactions)
- Use 5 steps for hypothesis testing (Note that in previous years, we used 4 steps, combining the last two)
- Use common sense / economic sense, some answers require more than just following steps

Good Luck!!