EC220-PS11

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Office hour: on Monday in S684
from 16:30 to 17:30

Today's class

Stochastic regressors:

Unbiased and consistent OLS estimates under the assumptions in chapter 8. We have now:

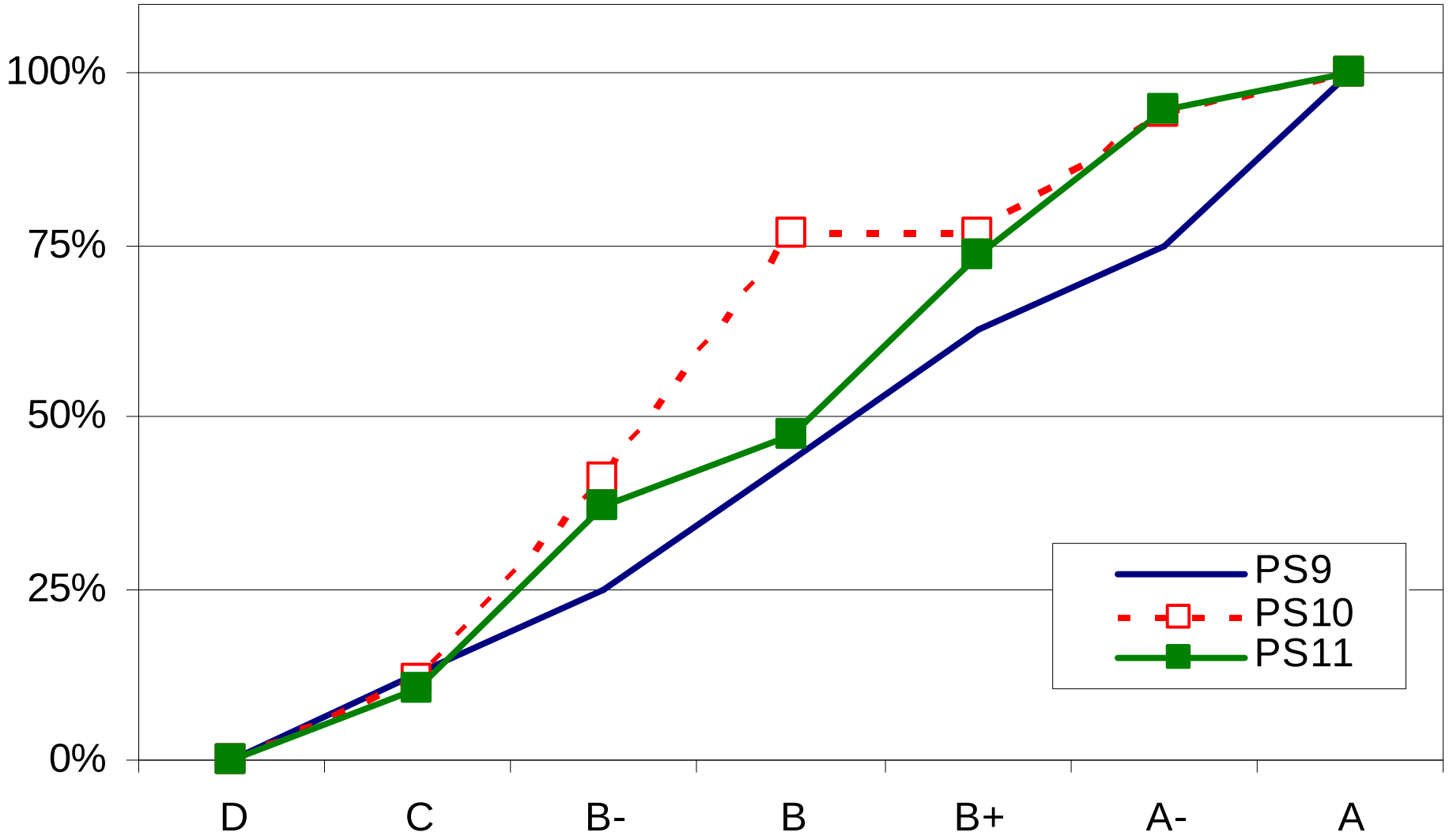
B2.Values of regressors are drawn randomly from fixed populations

Usually, we can do the same analysis as with model A. Today we look at the failure of one of the usual assumptions:

B7. The disturbance term is distributed independently of the regressors: ui independent of all the Xjk

Or B7'.

This is violated by measurement errors in explanatory variables: Finite sample properties? Large sample properties?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PS9
PS10
PS11

Main relationship is that: consumption is a given share of income:

$$C = \beta \times Y$$

- A change in Income by ΔY
- Generates a change in consumption by $\beta.\Delta Y$
  This will increase income by the same amount "next period".
- So the 2nd change in Consumption is $\beta^2.\Delta Y$
- …
- At the end of the day, the total change in income is=

$$\frac{1}{1-\beta}.\Delta Y$$

- **Multiplier** because $\frac{1}{1-\beta} > 1$
- β is the **propensity to consume out of income**.

Main issues

- Many of you are not very familiar with the concept of “plim” and its issues (it is only a large sample approximations).
- The plim of an estimator can be quite different from you point estimates.
- If one explanatory variable is correlated with the disturbance term then you can not use the expectation. **You have to explain this**.
- You need to be able to state the 3 requirements for a good IV. You **need** the **three conditions** to obtain a consistent IV estimator. **If one of the conditions** is violated then the use of this new estimator is unreliable.

Main issues (definition of a good IV)

- Three conditions for a good IV,Z for X in :

$$(*)\ Y=\beta_1+\beta_2 X+u$$

  - Correlated with the explanatory variable of interest, X, (such that b_iv exists in the sample) and Cov(X,Z) different from 0 (to have consistency).
  - Uncorrelated with the disturbance term, u. So that Cov(Z,u)=0 (to have consistency).
  - The variable Z does not belong in the model (*) as an explanatory variable. Otherwise (*) is misspecified and the IV estimator is subject to an omitted variable large sample “bias” (hence, b_iv is not consistent for beta2), see PS12.

Main issues (DWH test)

- State the correct Ho/H1
- State the issues of this test.
  - Only valid if the sample is large.
  - It has **low power** (high probability of type II errors) if the instrumental variable is weakly correlated with the explanatory variable of interest. In this case, se(b_iv) is very large and even a large difference with b_ols may not be significant.
  - State the **efficiency** of OLS if Ho appears valid.