

# Binary Dependent Variables in Stata

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# Overview

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- } A dependent variable is binary (or dichotomous) whenever it can only take one of two values, i.e. it is not continuous.
  - } E.g., a dummy variable is equal to either one or zero
  
- } Stata has two built in models for dealing with binary dependent variables
  - } *Probit depvar indepvar1 indepvar2 ..., options*
  - } *Logit depvar indepvar1 indepvar2 ..., options*
  
- } Generally speaking, results from these two models are quite close. Except in special cases, there is no general rule to prefer one over the other..

# Random effects models

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- } Probit and logit can both be estimated with random effects:
  - } Xtset countries
  - } Xtprobit depvar indepvar1 indepvar2 ..., re
  - } Xtlogit depvar indepvar1 indepvar2 ..., re
  - } To obtain probit and logit results with random effects by country.

# Fixed effects models

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- } Stata does not allow for fixed effects probit estimation
  - } There is a good technical reason for this, called the incidental parameters problem (outside our scope)
  - } Many people still estimate fixed effects probit models by entering dummy variables manually:
    - } *Probit depvar indepvar1 indpevar2 dum1 dum2 ...*
  - } Strictly speaking, such models are inconsistent, but the limited amount of simulation evidence available suggests that the damage may not be very large.

# Fixed effects models

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- } Logit models can be consistently estimated with fixed effects, and should be preferred to probit in panel data settings
  
- } *Xtlogit depvar indepvar1 indepvar2 ..., fe*