Binary Outcomes: LPM, Logit, and Probit – Supplement

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ECO 351 – Introduction to Econometrics

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Use full precision for a linear probability contrast

```
. lincom 0.10*pir
 ( 1)  .1*pir = 0
------------------------------------------------------------------------------
        deny | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         (1) |   .0603535   .0098483     6.13   0.000     .0410414    .0796656
------------------------------------------------------------------------------
```

A 0.10 PIR increase gives **6.04 percentage points**, with a 95% interval of approximately $[4.10, 7.97]$ points.

The displayed estimate uses the fitted coefficients at full precision. The classroom hand calculation used a rounded line.

Inspect the model on the actual estimation sample

```
. predict double p_lpm, xb

. count if !inrange(p_lpm,0,1) & !missing(p_lpm)
  40

. summarize p_lpm

    Variable |        Obs        Mean    Std. dev.       Min        Max
-------------+---------------------------------------------------------
       p_lpm |      2,380    .1197479    .0647335  -.0799096   1.730695
```

The command counts fitted values outside $[0, 1]$, excluding missing values explicitly.

The check concerns the fitted probability function in this sample. The recorded decisions are still coded zero or one.

Use the full nonlinear model at two chosen values

```
. margins, at(pir=(0.25 0.35))
Adjusted predictions                                    Number of obs = 2,380
------------------------------------------------------------------------------
             |            Delta-method
             |     Margin   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         _at |
          1  |   .0732255   .0078559     9.32   0.000     .0578281    .0886228
          2  |   .1239651   .0069828    17.75   0.000     .1102791    .1376511
------------------------------------------------------------------------------
```

Rows 1 and 2 set PIR to 0.25 and 0.35.

Calculate the fitted difference in percentage points before revealing the worked answer in the accompanying practice.