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Trabajo Práctico N° 5:
Modelos para Variables Dependientes Limitadas - Tobit.

Ejercicio 1: Variables Censuradas (Modelo Tobit I).

El modelo Tobit es relevante cuando la variable dependiente y de una regresión lineal se observa solo en algún intervalo de su soporte, porque, en este caso, los estimadores de MCC no son consistentes.

(a) *Considerar la base "auto.dta". Estimar el modelo:*

mpg= $\alpha + \beta wgt + u$,

donde wgt= $\frac{weight}{1000}$. *Luego, estimar el modelo generando una variable censurada suponiendo que no se observan autos con mpg ≤ 17. Estimar por MCC y utilizando un modelo Tobit. Comparar.*

OLS:

```
      Source |       SS           df       MS      Number of obs   =        74
-------------+----------------------------------   F(1, 72)        =    134.62
       Model |  1591.99024         1  1591.99024   Prob > F        =    0.0000
    Residual |  851.469221        72  11.8259614   R-squared       =    0.6515
-------------+----------------------------------   Adj R-squared   =    0.6467
       Total |  2443.45946        73  33.4720474   Root MSE        =    3.4389

------------------------------------------------------------------------------
         mpg | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         wgt |  -6.008687   .5178782   -11.60   0.000    -7.041058   -4.976316
       _cons |   39.44028   1.614003    24.44   0.000     36.22283    42.65774
------------------------------------------------------------------------------
```

OLS (ll(17)):

```
      Source |       SS           df       MS      Number of obs   =        74
-------------+----------------------------------   F(1, 72)        =     95.06
       Model |  1138.32073         1  1138.32073   Prob > F        =    0.0000
    Residual |  862.219806        72  11.9752751   R-squared       =    0.5690
-------------+----------------------------------   Adj R-squared   =    0.5630
       Total |  2000.54054        73  27.4046649   Root MSE        =    3.4605

------------------------------------------------------------------------------
       mpg_a | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         wgt |  -5.080912   .5211373    -9.75   0.000     -6.11978   -4.042044
       _cons |   37.12539    1.62416    22.86   0.000     33.88769     40.3631
------------------------------------------------------------------------------
```

Tobit (ll(17)):

```
Tobit regression                                     Number of obs     =     74
                                                            Uncensored =     56
Limits: Lower =   17                                     Left-censored =     18
        Upper = +inf                                    Right-censored =      0

                                                     LR chi2(1)        =  72.85
                                                     Prob > chi2       = 0.0000
Log likelihood = -164.25438                          Pseudo R2         = 0.1815

------------------------------------------------------------------------------
       mpg_a | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         wgt |   -6.87305    .700257    -9.82   0.000    -8.268661    -5.47744
       _cons |   41.49856   2.058384    20.16   0.000      37.3962    45.60091
-------------+----------------------------------------------------------------
 var(e.mpg_a)|   14.78942   2.817609                      10.11698    21.61977
------------------------------------------------------------------------------
```

Tabla comparativa:

```
------------------------------------------------------------
                      (1)             (2)             (3)
                      OLS       OLS ll(17)    Tobit ll(17)
------------------------------------------------------------
main
wgt                -6.009***       -5.081***       -6.873***
                  (0.518)         (0.521)         (0.700)

_cons               39.44***        37.13***        41.50***
                  (1.614)         (1.624)         (2.058)
------------------------------------------------------------
/
var(e.mpg_a)                                        14.79***
                                                  (2.818)
------------------------------------------------------------
N                      74              74              74
R-sq                0.652           0.569
pseudo R-sq                                         0.182
------------------------------------------------------------
Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01
```

(b) *Repetir el inciso anterior suponiendo que, ahora, no se observan autos con mpg ≥ 24.*

OLS (ul(24)):

```
      Source |       SS           df       MS      Number of obs   =        74
-------------+----------------------------------   F(1, 72)        =    186.15
       Model |  690.810491         1  690.810491   Prob > F        =    0.0000
    Residual |  267.189509        72   3.7109654   R-squared       =    0.7211
-------------+----------------------------------   Adj R-squared   =    0.7172
       Total |         958        73  13.1232877   Root MSE        =    1.9264

------------------------------------------------------------------------------
       mpg_b | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         wgt |  -3.958119   .2901034   -13.64   0.000    -4.536429   -3.379808
       _cons |   31.95138   .9041273    35.34   0.000     30.14903    33.75372
------------------------------------------------------------------------------
```

Tobit (ul(24)):

```
Tobit regression                                      Number of obs     =     74
                                                             Uncensored =     51
Limits: Lower = -inf                                      Left-censored =      0
        Upper =   24                                     Right-censored =     23

                                                      LR chi2(1)        =  90.72
                                                      Prob > chi2       = 0.0000
Log likelihood = -129.8279                            Pseudo R2         = 0.2589

------------------------------------------------------------------------------
       mpg_b | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         wgt |  -5.080645   .4349309   -11.68   0.000    -5.947461   -4.213829
       _cons |   36.08037   1.432059    25.19   0.000     33.22628    38.93446
-------------+----------------------------------------------------------------
 var(e.mpg_b)|   5.689927   1.166256                      3.781783    8.560846
------------------------------------------------------------------------------
```

Tabla comparativa:

```
------------------------------------------------------------
                      (1)             (2)             (3)
                      OLS       OLS ul(24)    Tobit ul(24)
------------------------------------------------------------
main
wgt                -6.009***       -3.958***       -5.081***
                  (0.518)         (0.290)         (0.435)

_cons               39.44***        31.95***        36.08***
                  (1.614)         (0.904)         (1.432)
------------------------------------------------------------
/
var(e.mpg_b)                                        5.690***
                                                  (1.166)
------------------------------------------------------------
N                      74              74              74
R-sq                0.652           0.721
pseudo R-sq                                         0.259
------------------------------------------------------------
Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01
```

(c) *¿Cómo se interpretan los coeficientes del modelo? Computar los efectos marginales.*

Los coeficientes estimados miden cómo cambia la variable latente no observada con respecto a los cambios en las variables independientes, *céteris páribus*.

<u>Efectos marginales (condicionales) con censura en Tobit (ll(17)):</u>

```
Conditional marginal effects                                Number of obs = 74
Model VCE: OIM

Expression: E(mpg_a*|mpg_a>17), predict(ystar(17,.))
dy/dx wrt:  wgt
1._at: wgt = 1
2._at: wgt = 2
3._at: wgt = 3
4._at: wgt = 4

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
wgt          |
         _at |
          1  |  -6.873035   1.389235    -4.95   0.000    -9.595886   -4.150183
          2  |  -6.855268   .7044715    -9.73   0.000    -8.236007    -5.47453
          3  |  -5.797116   .5880797    -9.86   0.000    -6.949731   -4.644501
          4  |  -1.499391   .3662326    -4.09   0.000    -2.217194   -.7815884
------------------------------------------------------------------------------
```

<u>Efectos marginales (condicionales) con truncamiento en Tobit (ll(17)):</u>

```
Conditional marginal effects                                Number of obs = 74
Model VCE: OIM

Expression: E(mpg_a|mpg_a>17), predict(e(17,.))
dy/dx wrt:  wgt
1._at: wgt = 1
2._at: wgt = 2
3._at: wgt = 3
4._at: wgt = 4

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
wgt          |
         _at |
          1  |  -6.872705    .700472    -9.81   0.000    -8.245605   -5.499805
          2  |  -6.718373   .7348761    -9.14   0.000    -8.158703   -5.278042
          3  |  -4.345679   .4915117    -8.84   0.000    -5.309024   -3.382334
          4  |  -1.560439   .1287703   -12.12   0.000    -1.812825   -1.308054
------------------------------------------------------------------------------
```

Efectos marginales (condicionales) con censura en Tobit (ul(24)):

```
Conditional marginal effects                            Number of obs = 74
Model VCE: OIM

Expression: E(mpg_b*|mpg_b<24), predict(ystar(.,24))
dy/dx wrt:  wgt
1._at: wgt = 1
2._at: wgt = 2
3._at: wgt = 3
4._at: wgt = 4

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
wgt          |
         _at |
          1  |  -.0085382   .0114991    -0.74   0.458     -.031076    .0139997
          2  |  -1.069716   .2842071    -3.76   0.000    -1.626752   -.5126807
          3  |  -4.610593   .3715716   -12.41   0.000     -5.33886   -3.882326
          4  |  -5.079249   .4349007   -11.68   0.000    -5.931638   -4.226859
------------------------------------------------------------------------------
```

Efectos marginales (condicionales) con truncamiento en Tobit (ul(24)):

```
Conditional marginal effects                            Number of obs = 74
Model VCE: OIM

Expression: E(mpg_b|mpg_b<24), predict(e(.,24))
dy/dx wrt:  wgt
1._at: wgt = 1
2._at: wgt = 2
3._at: wgt = 3
4._at: wgt = 4

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
wgt          |
         _at |
          1  |  -.3691762   .0534955    -6.90   0.000    -.4740255   -.2643269
          2  |   -1.13567   .1001953   -11.33   0.000    -1.332049    -.939291
          3  |  -3.681238   .3548315   -10.37   0.000    -4.376695   -2.985781
          4  |   -5.06274   .4362475   -11.61   0.000    -5.917769    -4.20771
------------------------------------------------------------------------------
```

<u>Ejercicio 2:</u> Variables Censuradas (Modelo Tobit II).

El siguiente ejercicio está tomado de Cameron & Trivedi. La variable dependiente para el gasto ambulatorio (ambulatory expenditure, ambexp) y los regresores (age, female, educ, blhisp, totchr, ins) se obtienen de la encuesta Medical Expenditure Panel Survey de 2001.

(a) *Abrir y describir la base "mus16datav2.dta". ¿Qué se puede decir sobre el cumplimiento de las condiciones que requiere un Tobit?*

```
    Variable |        Obs        Mean    Std. dev.       Min        Max
-------------+---------------------------------------------------------
      ambexp |      3,328    1386.519    2530.406          0      49960
         age |      3,328    4.056881    1.121212        2.1        6.4
      female |      3,328    .5084135    .5000043          0          1
        educ |      3,328    13.40565    2.574199          0         17
      blhisp |      3,328    .3085938    .4619824          0          1
      totchr |      3,328    .4831731    .7720426          0          5
         ins |      3,328    .3650841    .4815261          0          1
```

```
                           ambexp
-------------------------------------------------------------
      Percentiles      Smallest
 1%           22              1
 5%           67              2
10%          107              2       Obs               2,802
25%          275              4       Sum of wgt.       2,802

50%          779                      Mean             1646.8
                        Largest       Std. dev.      2678.914
75%         1913          28269
90%         3967          30920       Variance        7176579
95%         6027          34964       Skewness       5.799312
99%        12467          49960       Kurtosis       65.81969
```

Lo que se puede decir sobre el cumplimiento de las condiciones que requiere Tobit es que, en principio, la asimetría y la curtosis no normal (alejadas de 0 y 3, respectivamente) de la variable dependiente *ambexp* podrían deberse a regresores que están sesgados.

Tobit:

```
Tobit regression                                    Number of obs     =  3,328
                                                           Uncensored =  2,802
Limits: Lower =    0                                    Left-censored =    526
        Upper = +inf                                   Right-censored =      0

                                                    LR chi2(6)        = 694.07
                                                    Prob > chi2       = 0.0000
Log likelihood = -26359.424                         Pseudo R2         = 0.0130

-------------------------------------------------------------------------------
       ambexp | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
--------------+----------------------------------------------------------------
          age |   314.1479   42.63366     7.37   0.000      230.557    397.7388
       female |   684.9918   92.85464     7.38   0.000     502.9337    867.0498
         educ |    70.8656   18.57365     3.82   0.000     34.44865    107.2825
       blhisp |   -530.311   104.2669    -5.09   0.000    -734.7448   -325.8772
       totchr |   1244.578   60.51376    20.57   0.000      1125.93    1363.226
          ins |  -167.4714   96.46088    -1.74   0.083    -356.6002    21.65734
        _cons |  -1882.591   317.4305    -5.93   0.000    -2504.971   -1260.212
--------------+----------------------------------------------------------------
 var(e.ambexp)|    6635296   179247.7                       6292994     6996217
-------------------------------------------------------------------------------
```

(b) *Computar los efectos marginales.*

Efectos marginales (promedio) con censura en Tobit:

```
Average marginal effects                                 Number of obs = 3,328
Model VCE: OIM

Expression: E(ambexp*|ambexp>0), predict(ystar(0,.))
dy/dx wrt:  age female educ blhisp totchr ins

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         age |   201.4409   27.29283     7.38   0.000     147.9479    254.9338
      female |   439.2368   59.32556     7.40   0.000     322.9608    555.5127
        educ |    45.4411   11.89795     3.82   0.000     22.12154    68.76066
      blhisp |  -340.0509   66.77218    -5.09   0.000     -470.922   -209.1799
      totchr |     798.06   38.00729    21.00   0.000     723.5671    872.5529
         ins |  -107.3876   61.86227    -1.74   0.083    -228.6354    13.86024
------------------------------------------------------------------------------
```

Efectos marginales (promedio) con truncamiento en Tobit:

```
Average marginal effects                                 Number of obs = 3,328
Model VCE: OIM

Expression: E(ambexp|ambexp>0), predict(e(0,.))
dy/dx wrt:  age female educ blhisp totchr ins

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         age |    147.796   20.14716     7.34   0.000     108.3083    187.2838
      female |   322.2656    43.7895     7.36   0.000     236.4397    408.0914
        educ |   33.33988   8.742173     3.81   0.000     16.20554    50.47422
      blhisp |  -249.4935   49.12834    -5.08   0.000    -345.7832   -153.2037
      totchr |   585.5322   29.01047    20.18   0.000     528.6727    642.3917
         ins |  -78.78967   45.40264    -1.74   0.083    -167.7772    10.19787
------------------------------------------------------------------------------
```

Efectos marginales (condicionales) con censura en Tobit:

```
Conditional marginal effects                             Number of obs = 3,328
Model VCE: OIM

Expression: E(ambexp*|ambexp>0), predict(ystar(0,.))
dy/dx wrt:  age female educ blhisp totchr ins
At: age    = 4.056881 (mean)
    female = .5084135 (mean)
    educ   = 13.40565 (mean)
    blhisp = .3085938 (mean)
    totchr = .4831731 (mean)
    ins    = .3650841 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         age |    207.526    28.2054     7.36   0.000     152.2444    262.8076
      female |   452.5052   61.30341     7.38   0.000     332.3528    572.6577
        educ |   46.81378   12.26552     3.82   0.000     22.77381    70.85375
      blhisp |  -350.3232   68.86825    -5.09   0.000    -485.3025   -215.3439
      totchr |   822.1678   40.61039    20.25   0.000     742.5729    901.7627
         ins |  -110.6315   63.74577    -1.74   0.083    -235.5709    14.30787
------------------------------------------------------------------------------
```

Efectos marginales (condicionales) con truncamiento en Tobit:

```
Conditional marginal effects                             Number of obs = 3,328
Model VCE: OIM

Expression: E(ambexp|ambexp>0), predict(e(0,.))
dy/dx wrt:  age female educ blhisp totchr ins
At: age    = 4.056881 (mean)
    female = .5084135 (mean)
    educ   = 13.40565 (mean)
    blhisp = .3085938 (mean)
    totchr = .4831731 (mean)
    ins    = .3650841 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         age |    145.524    19.7808     7.36   0.000     106.7543    184.2936
      female |   317.3113   42.99069     7.38   0.000     233.0511    401.5716
        educ |   32.82734   8.601086     3.82   0.000     15.96952    49.68516
      blhisp |   -245.658   48.29427    -5.09   0.000     -340.313   -151.0029
      totchr |   576.5307   28.50492    20.23   0.000     520.6621    632.3993
         ins |  -77.57842    44.7012    -1.74   0.083    -165.1912    10.03432
------------------------------------------------------------------------------
```

(c) *Computar los efectos marginales haciendo las cuentas con los comandos de escalares y matrices de Stata.*

Stata.

(d) *Considerar la variable dependiente en logaritmos. ¿Qué interpretación tiene esto sobre la variable dependiente? ¿Qué complicaciones introduce en el análisis? Estimar un Tobit para el logaritmo de ambexp.*

La variable dependiente en logaritmos introduce dos complicaciones en el análisis: un umbral distinto de cero y una variable dependiente lognormal.

OLS (con variable dependiente en logaritmos):

```
      Source |       SS           df       MS      Number of obs   =     3,328
-------------+----------------------------------   F(6, 3321)      =    169.68
       Model |  5772.79592         6  962.132653   Prob > F        =    0.0000
    Residual |  18831.0239     3,321  5.67028725   R-squared       =    0.2346
-------------+----------------------------------   Adj R-squared   =    0.2332
       Total |  24603.8199     3,327  7.39519683   Root MSE        =    2.3812

------------------------------------------------------------------------------
     lambexp | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         age |   .3247317    .038348     8.47   0.000     .2495436    .3999199
      female |   1.144695   .0833418    13.73   0.000     .9812886    1.308102
        educ |    .114108   .0165414     6.90   0.000     .0816757    .1465403
      blhisp |  -.7341754   .0928854    -7.90   0.000    -.9162938   -.5520571
      totchr |   1.059395   .0553699    19.13   0.000     .9508324    1.167958
         ins |   .2078343   .0869061     2.39   0.017     .0374394    .3782293
       _cons |   1.728764   .2812597     6.15   0.000     1.177304    2.280224
------------------------------------------------------------------------------
```

Tobit (con variable dependiente en logaritmos):

```
Tobit regression                                    Number of obs     =  3,328
                                                           Uncensored =  2,802
Limits: Lower = -0.00                                   Left-censored =    526
        Upper =  +inf                                  Right-censored =      0

                                                    LR chi2(6)        = 831.03
                                                    Prob > chi2       = 0.0000
Log likelihood = -7494.29                           Pseudo R2         = 0.0525

--------------------------------------------------------------------------------
       lambexp | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
---------------+----------------------------------------------------------------
           age |   .3630699   .0453222     8.01   0.000     .2742077    .4519321
        female |   1.341809   .0986074    13.61   0.000     1.148471    1.535146
          educ |    .138446   .0196568     7.04   0.000     .0999054    .1769866
        blhisp |  -.8731611   .1102504    -7.92   0.000    -1.089327   -.6569955
        totchr |   1.161268   .0649655    17.88   0.000     1.033891    1.288644
           ins |   .2612202    .102613     2.55   0.011     .0600292    .4624112
         _cons |   .9237178   .3350343     2.76   0.006     .2668233    1.580612
---------------+----------------------------------------------------------------
 var(e.lambexp)|   7.735265   .2181984                      7.319064    8.175133
--------------------------------------------------------------------------------
```

Tabla comparativa:

	(1) OLS (log)	(2) Tobit (log)
main		
age	0.325***	0.363***
	(0.0383)	(0.0453)
female	1.145***	1.342***
	(0.0833)	(0.0986)
educ	0.114***	0.138***
	(0.0165)	(0.0197)
blhisp	-0.734***	-0.873***
	(0.0929)	(0.110)
totchr	1.059***	1.161***
	(0.0554)	(0.0650)
ins	0.208**	0.261**
	(0.0869)	(0.103)
_cons	1.729***	0.924***
	(0.281)	(0.335)
/		
var(e.lamb~)		7.735***
		(0.218)
N	3328	3328
R-sq	0.235	
pseudo R-sq		0.053

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

<u>Ejercicio 3:</u> Variables Censuradas (Modelo Tobit III).

Considerar la base de datos "mroz.dta", que posee datos que permiten estudiar la oferta laboral anual de mujeres casadas. Considerar las horas trabajadas, hours, y las explicativas nwifeinc, educ, exper, expersq, age, kidslt6, kidsge6. Estimar un modelo lineal y un modelo Tobit. Comparar. Computar los efectos marginales.

<u>OLS:</u>

```
      Source |       SS           df       MS      Number of obs   =       753
-------------+----------------------------------   F(7, 745)       =     38.50
       Model |  151647606         7  21663943.7   Prob > F        =    0.0000
    Residual |  419262118       745  562767.944   R-squared       =    0.2656
-------------+----------------------------------   Adj R-squared   =    0.2587
       Total |  570909724       752  759188.463   Root MSE        =    750.18

------------------------------------------------------------------------------
       hours | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
     kidslt6 |  -442.0899    58.8466    -7.51   0.000    -557.6148    -326.565
     kidsge6 |  -32.77923   23.17622    -1.41   0.158     -78.2777    12.71924
         age |  -30.51163   4.363868    -6.99   0.000    -39.07858   -21.94469
        educ |   28.76112   12.95459     2.22   0.027     3.329283    54.19297
       exper |   65.67251   9.962983     6.59   0.000     46.11365    85.23138
    nwifeinc |  -3.446636      2.544    -1.35   0.176    -8.440898    1.547626
     expersq |  -.7004939   .3245501    -2.16   0.031    -1.337635   -.0633524
       _cons |   1330.482   270.7846     4.91   0.000     798.8906    1862.074
------------------------------------------------------------------------------
```

<u>Tobit:</u>

```
Tobit regression                                    Number of obs     =    753
                                                        Uncensored =    428
Limits: Lower =    0                                 Left-censored =    325
        Upper = +inf                                Right-censored =      0

                                                    LR chi2(7)        = 271.59
                                                    Prob > chi2       = 0.0000
Log likelihood = -3819.0946                         Pseudo R2         = 0.0343

------------------------------------------------------------------------------
       hours | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
     kidslt6 |  -894.0202   111.8777    -7.99   0.000    -1113.653   -674.3875
     kidsge6 |  -16.21805    38.6413    -0.42   0.675    -92.07668    59.64057
         age |  -54.40491   7.418483    -7.33   0.000     -68.9685   -39.84133
        educ |   80.64541   21.58318     3.74   0.000     38.27441    123.0164
       exper |    131.564   17.27935     7.61   0.000     97.64211     165.486
    nwifeinc |  -8.814226   4.459089    -1.98   0.048    -17.56808   -.0603706
     expersq |  -1.864153   .5376606    -3.47   0.001    -2.919661   -.8086455
       _cons |   965.3068   446.4351     2.16   0.031     88.88827    1841.725
-------------+----------------------------------------------------------------
 var(e.hours)|    1258927   93304.48                       1088458     1456093
------------------------------------------------------------------------------
```

Tabla comparativa:

	(1) OLS	(2) Tobit
main		
kidslt6	-442.1***	-894.0***
	(58.85)	(111.9)
kidsge6	-32.78	-16.22
	(23.18)	(38.64)
age	-30.51***	-54.40***
	(4.364)	(7.418)
educ	28.76**	80.65***
	(12.95)	(21.58)
exper	65.67***	131.6***
	(9.963)	(17.28)
nwifeinc	-3.447	-8.814**
	(2.544)	(4.459)
expersq	-0.700**	-1.864***
	(0.325)	(0.538)
_cons	1330.5***	965.3**
	(270.8)	(446.4)
/		
var(e.hours)		1258926.8***
		(93304.5)
N	753	753
R-sq	0.266	
pseudo R-sq		0.034

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Efectos marginales (promedio) con censura en Tobit:

```
Average marginal effects                                Number of obs = 753
Model VCE: OIM

Expression: E(hours*|hours>0), predict(ystar(0,.))
dy/dx wrt:  kidslt6 kidsge6 age educ exper nwifeinc expersq

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
     kidslt6 |  -526.2776   64.70619    -8.13   0.000    -653.0994   -399.4558
     kidsge6 |  -9.546986   22.75224    -0.42   0.675    -54.14056    35.04659
         age |  -32.02622    4.29211    -7.46   0.000     -40.4386   -23.61384
        educ |   47.47306    12.6214     3.76   0.000     22.73558    72.21054
       exper |   77.44703    9.99765     7.75   0.000     57.85199    97.04206
    nwifeinc |  -5.188619   2.621409    -1.98   0.048    -10.32649   -.0507514
     expersq |   -1.09736   .3155945    -3.48   0.001    -1.715914   -.4788063
------------------------------------------------------------------------------
```

Efectos marginales (promedio) con truncamiento en Tobit:

```
Average marginal effects                                Number of obs = 753
Model VCE: OIM

Expression: E(hours|hours>0), predict(e(0,.))
dy/dx wrt:  kidslt6 kidsge6 age educ exper nwifeinc expersq

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
     kidslt6 |  -402.5505   50.74874    -7.93   0.000    -502.0162   -303.0848
     kidsge6 |  -7.302504   17.40426    -0.42   0.675    -41.41423    26.80922
         age |   -24.4969   3.362491    -7.29   0.000    -31.08726   -17.90654
        educ |   36.31221   9.703035     3.74   0.000     17.29461    55.32981
       exper |   59.23934    7.83368     7.56   0.000     43.88561    74.59308
    nwifeinc |  -3.968782   2.007582    -1.98   0.048    -7.903569   -.0339945
     expersq |  -.8393724   .2423183    -3.46   0.001    -1.314307   -.3644373
------------------------------------------------------------------------------
```

Efectos marginales (condicionales) con censura en Tobit:

```
Conditional marginal effects                              Number of obs = 753
Model VCE: OIM

Expression: E(hours*|hours>0), predict(ystar(0,.))
dy/dx wrt:  kidslt6 kidsge6 age educ exper nwifeinc expersq
At: kidslt6  = .2377158 (mean)
    kidsge6  = 1.353254 (mean)
    age      = 42.53785 (mean)
    educ     = 12.28685 (mean)
    exper    = 10.63081 (mean)
    nwifeinc = 20.12896 (mean)
    expersq  = 178.0385 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
     kidslt6 |  -540.2567   66.62387    -8.11   0.000    -670.8371   -409.6763
     kidsge6 |  -9.800576   23.36132    -0.42   0.675    -55.58792    35.98677
         age |  -32.87691   4.457699    -7.38   0.000    -41.61384   -24.13998
        educ |   48.73405    12.9634     3.76   0.000     23.32625    74.14185
       exper |   79.50419   10.30495     7.72   0.000     59.30685    99.70153
    nwifeinc |   -5.32644   2.690724    -1.98   0.048    -10.60016   -.0527175
     expersq |  -1.126508   .3232603    -3.48   0.000    -1.760087     -.49293
------------------------------------------------------------------------------
```

Efectos marginales (condicionales) con truncamiento en Tobit:

```
Conditional marginal effects                              Number of obs = 753
Model VCE: OIM

Expression: E(hours|hours>0), predict(e(0,.))
dy/dx wrt:  kidslt6 kidsge6 age educ exper nwifeinc expersq
At: kidslt6  = .2377158 (mean)
    kidsge6  = 1.353254 (mean)
    age      = 42.53785 (mean)
    educ     = 12.28685 (mean)
    exper    = 10.63081 (mean)
    nwifeinc = 20.12896 (mean)
    expersq  = 178.0385 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
     kidslt6 |  -379.9678   46.79714    -8.12   0.000    -471.6885   -288.2471
     kidsge6 |  -6.892841   16.42951    -0.42   0.675    -39.09409     25.3084
         age |  -23.12265   3.130037    -7.39   0.000    -29.25741   -16.98789
        educ |   34.27513   9.117076     3.76   0.000     16.40599    52.14427
       exper |   55.91608   7.239109     7.72   0.000     41.72769    70.10447
    nwifeinc |  -3.746137    1.89236    -1.98   0.048    -7.455095     -.03718
     expersq |  -.7922845   .2273444    -3.48   0.000    -1.237871   -.3466976
------------------------------------------------------------------------------
```