**predict advanced — predict’s advanced features**

### Description

`predict`’s features are documented in

- [ERM] `eregress predict`
- [ERM] `eintreg predict`
- [ERM] `eprobit predict`
- [ERM] `eoprobit predict`
- [ERM] `predict treatment`

Here, we document `predict`’s advanced features.

### Syntax

```
predict [ type ] newvar [ if ] [ in ] [ , treatstatistic howcalculated treatmodifier oprobitmodifier advanced ]
```

In some cases, more than one new variable needs to be specified:

```
predict [ type ] { stub* | newvarlist } [ if ] [ in ] [ , treatstatistic howcalculated treatmodifier oprobitmodifier advanced ]
```

With the exception of `advanced`, you have seen this syntax in the other `predict` manual entries. We will not cover old ground.

### advanced

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>equation(depvar)</strong></td>
</tr>
<tr>
<td>calculate results for specified dependent variable</td>
</tr>
<tr>
<td><strong>nooffset</strong></td>
</tr>
<tr>
<td>ignore option <code>offset()</code> specified when model was fit in making calculation</td>
</tr>
<tr>
<td><strong>pr(a, b)</strong></td>
</tr>
<tr>
<td>calculate ( \Pr(a &lt; x_i \beta + e_i.depvar &lt; b) ); ( a ) and ( b ) are numbers or variable names</td>
</tr>
<tr>
<td><strong>e(a, b)</strong></td>
</tr>
<tr>
<td>calculate ( E(y_i</td>
</tr>
<tr>
<td><strong>expmean</strong></td>
</tr>
<tr>
<td>calculate ( E{\exp(y_i)} )</td>
</tr>
<tr>
<td><strong>scores</strong></td>
</tr>
<tr>
<td>calculate equation-level score variables for cross-sectional models and parameter-level score variables for panel data models</td>
</tr>
</tbody>
</table>

1
Also note that even though option mean was not included in treat statistic for eprobit, eoprobit, xteprobit, and xteoprobit it is allowed with them. mean returns the probability of a positive outcome after eprobit and xteprobit and returns the expected value of the outcome after eoprobit and xteoprobit.

Options

equation(depvar) specifies the dependent variable for which predictions are to be calculated. By default, predictions are made for the dependent variable of the main equation.

nooffset is relevant only if you specified offset() when you fit the model. It modifies the calculations made by predict so that they ignore the offset variable.

pr(a, b) calculates \( Pr(a < x_i \beta + e_i < b) \), the probability that the linear prediction is between \( a \) and \( b \).

\( a \) and \( b \) may be specified as numbers or variable names. If \( a \) is missing (\( a \geq . \)), then \( a \) is treated as \( -\infty \). If \( b \) is missing (\( b \geq . \)), then \( b \) is treated as \( +\infty \).

e(a, b) calculates \( E(y_i | a < y_i < b) \), where \( y_i = x_i \beta + e_i \cdot depvar \). This is the linear prediction conditional on the outcome being between \( a \) and \( b \).

\( a \) and \( b \) may be specified as numbers or variable names. If \( a \) is missing (\( a \geq . \)), then \( a \) is treated as \( -\infty \). If \( b \) is missing (\( b \geq . \)), then \( b \) is treated as \( +\infty \).

expmean calculates the mean of the exponentiated outcome.

scores calculates equation-level scores for cross-sectional models (eintreg, eoprobit, eprobit, and eregress) and parameter-level scores for panel-data models (xteintreg, xteoprobit, xteprobit, and xteregress).

Remarks and examples

The most important of the advanced features is the equation() option. Previously, we documented that predict calculates results for the main equation only. That was not true. The equation() option can be used to target the other equations. The equation() option is important because it can apply so many of predict’s features to them.

ERMs provide three types of equations. The endogenous() option names two of them and leaves the other unnamed:

\[
\begin{align*}
\text{endogenous}(\ldots, \text{none specified} \ldots) \\
\text{endogenous}(\ldots, \text{probit} \ldots) \\
\text{endogenous}(\ldots, \text{oiprobit} \ldots)
\end{align*}
\]

none specified should have been called linear. Meanwhile, entreat() adds probit or oprobit equations, select() adds probit equations, and tobitselect() adds linear equations. Thus, there are three types of equations in total: linear, probit, and oprobit.
equation() can be used to provide the following predict features with the other equations in the model:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear equations</td>
<td></td>
</tr>
<tr>
<td>mean</td>
<td>linear prediction</td>
</tr>
<tr>
<td>xb</td>
<td>linear prediction excluding complications</td>
</tr>
<tr>
<td>ystar()</td>
<td>censored prediction</td>
</tr>
<tr>
<td>e()</td>
<td>constrained expected value</td>
</tr>
<tr>
<td>pr()</td>
<td>probability in range</td>
</tr>
<tr>
<td>expmean</td>
<td>mean of exponentiated outcome</td>
</tr>
<tr>
<td>Probit equations</td>
<td></td>
</tr>
<tr>
<td>xb</td>
<td>linear prediction excluding complications</td>
</tr>
<tr>
<td>pr</td>
<td>probability of positive outcome</td>
</tr>
<tr>
<td>mean</td>
<td>synonym for pr</td>
</tr>
<tr>
<td>Ordered probit equations</td>
<td></td>
</tr>
<tr>
<td>xb</td>
<td>linear prediction excluding complications</td>
</tr>
<tr>
<td>pr</td>
<td>probability of each outcome</td>
</tr>
<tr>
<td>mean</td>
<td>expected value of outcome</td>
</tr>
</tbody>
</table>

Note 1: Option `outlevel(#)` is used with `pr` in `oprobit` equations to restrict the calculation to the specified outcome.

Note 2: When `equation(depvar)` is the main equation, you can use any of `predict`’s options.

Note 3: For the main equation, options `e()` and `pr()` can be used with `howcalculated` options `fix()`, `base()`, and `target()`.

Options not allowed with `equation()` include `predict`’s treatment options as well as `fix()`, `base()`, and `target()`.

For an example of `predict` with the `equation()` option, see [ERM] Example 6b.

Methods and formulas

See Methods and formulas of [ERM] eprobit postestimation.

Also see

[ERM] eintreg postestimation — Postestimation tools for eintreg and xteintreg
[ERM] eintreg predict — predict after eintreg and xteintreg
[ERM] eoprobit postestimation — Postestimation tools for eoprobit and xteoprobit
[ERM] eoprobit predict — predict after eoprobit and xteoprobit
[ERM] eprobit postestimation — Postestimation tools for eprobit and xteprobit
[ERM] eprobit predict — predict after eprobit and xteprobit
[ERM] eregress postestimation — Postestimation tools for eregress and xteregress
[ERM] eregress predict — predict after eregress and xteregress