The oddsratios package

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This package computes odds-ratios (point estimates plus confidence intervals) based on the coefficients and standard errors obtained from logit estimation. Binary and ordered logit are supported; multinomial logit is not supported at this point.

Odds-ratios are obtained by exponentiating the logit coefficients; to get confidence intervals we take the exponentials of the estimated coefficient plus and minus the z-score associated with the given confidence level times the estimated standard error.

The package offers three public functions. The most basic is `oddsratios_matrix()`, which takes the following arguments:

<table>
<thead>
<tr>
<th>name</th>
<th>type</th>
<th>comment</th>
<th>default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cf</td>
<td>matrix</td>
<td>logit coefficients</td>
<td>-</td>
</tr>
<tr>
<td>se</td>
<td>matrix</td>
<td>associated standard errors</td>
<td>-</td>
</tr>
<tr>
<td>alpha</td>
<td>scalar</td>
<td>$\alpha$, governs coverage</td>
<td>0.05</td>
</tr>
</tbody>
</table>

This function returns a $k \times 3$ matrix, where $k$ is the (common) number of elements in $cf$ and $se$. The columns hold, respectively, the estimated odds ratio and the lower and upper bounds of a confidence interval with nominal coverage of $100 \times (1 - \alpha)$ percent.

Note that if you are using this function following estimation of a logit model that includes a constant you will probably want to omit the constant from the analysis. Since gretl always places the constant first in the coefficient vector, a suitable call would look like the following:

```
logit ...
matrix OR = oddsratios_matrix($coeff[2:],$stderr[2:], 0.05)
print OR
```

It would be OK to omit the third argument here, to accept the default of $\alpha = 0.05$.

Alternatively, the function `oddsratios()` produces a bundle, and by default prints nicely formatted output. The arguments to this function are:

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<tr>
<td>alpha</td>
<td>scalar</td>
<td>$\alpha$, governs coverage</td>
<td>0.05</td>
</tr>
<tr>
<td>depvar</td>
<td>string</td>
<td>name of dependent variable</td>
<td>-</td>
</tr>
<tr>
<td>Xlist</td>
<td>list</td>
<td>list of regressors</td>
<td>-</td>
</tr>
<tr>
<td>silent</td>
<td>boolean</td>
<td>suppress printout?</td>
<td>0 (false)</td>
</tr>
</tbody>
</table>

This function is designed such that you can supply all the substantive arguments via accessor variables following estimation of a logit model. For example,

```
include oddsratios.gfn
open mroz87.gdt --quiet
```
list X = const KL6 K618 WA WE HA
logit LFP X
oddsratios($coeff, $stderr, 0.05, $depvar, $xlist)

Unlike oddsratios_matrix(), this function uses the model’s $xlist to skip the constant automatically, if present.

In the invocation above, the bundle return-value is discarded and the results are printed. If one wanted to save the bundle for further processing and skip the printout, one could do

bundle b = oddsratios($coeff, $stderr, 0.05, $depvar, $xlist, 1)

The bundle returned by oddsratios() contains four members:

- or matrix as produced by oddsratios_matrix()
- depvar string name of dependent variable
- vnames array of strings names associated with coefficients
- alpha scalar \( \alpha \)

The third public function simply serves to print the content of a bundle produced by oddsratios():

```bash
# assuming bundle b was produced by oddsratios
oddsratios_print(&b)
```

Note that the bundle is passed to oddsratios_print() in “pointer” form.