

## OUTREG

Write formatted regression output to a text file

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After any estimation command:

**outreg** [*varlist*] **using** filename [,

(Text-related options)

**no**label **ti**tle(textlist) **cti**tle(textlist) **nonotes** **addnote**(textlist)

(Coefficient options)

**bdec**(numlist) **bfmt**(textlist) **coefastr**

(Options for *t* statistics, standard errors, etc.)

{**se** | **pvalue** | **ci** | **beta**} **level**(#) **tdec**(#) **noparen** **bracket**  
**{noaster** | **3aster** | **10pct**} **si**gsymb(textlist)

(Statistics options)

**nocons** **nonobs** **noni** **nor2** **adjr2** **rdec**(#) **addstat**("text", # [, " text", # ...])  
**adec**(numlist) **eform** **margin**[({u|c|p})] **onecol** **xstats**

(Other options)

**comma** **replace** **append**]

**outreg** is available after any estimation command. A textlist (my own term) is a list of text separated by commas, i.e. "text" [, "text" ...]. It is similar to a numlist or a *varlist*, but commas are required. Each text element in the list does not need to be enclosed in quotation marks unless the text contains commas or parentheses.

## Description

**outreg** formats regression output as it is presented in most documents. The ultimate purpose of most estimation is to present the results in tables quite different from those displayed within Stata. **outreg** automates the process of converting the regression results to most of the standard presentation formats by creating a text file for inclusion in a word processing table.

**outreg** should work after any estimation command in Stata (see [R] estimation commands for a complete list). Like **predict**, **outreg** makes use of internally saved estimation results, so it should be invoked immediately after the estimation. In addition to coefficient estimates, by default **outreg** will report t statistics with asterisks for standard significance levels (1% and 5%), number of observations, true R-squareds (no pseudo R-squareds), and the number of groups in panel estimation. The user can add their own chosen titles (**title** and **ctitle**), statistics (**addstat**), and notes (**addnote**) to the table, and change many aspects of the output. The t statistics under the coefficients can be replaced by standard errors, p values of t statistics, confidence intervals, or normalized beta coefficients.

**outreg** creates an ASCII text file with columns separated with tab characters. The file can be converted automatically to a table in word processors and spreadsheets. For example, the process in Microsoft Word is simple: Open or Insert the file created by **outreg**. Select the estimation output text that is in columns (not the notes at the bottom of the table or the title at the top, if any), and choose Table, Convert Text to Table. With some adjustment of the column widths, fonts, etc. the final table is ready. In Excel, open the file created by **outreg** and follow the default choices in the Text Import Wizard (note that when loading the output into a spreadsheet, the parentheses around the t statistics may convert to negative numbers). Other word processors and spreadsheet software should be similar.

Successive estimation results, possibly with different variables, can be combined by **outreg** in a single table with the variable coefficients lined up properly using the append option. Multivariate regression commands like **sureg**, **mvreg**, and **reg3** are formatted equation by equation, and can be appended.

**outreg** rewards the use of variable labels (and value labels for **ml ogit**, **svyml og**, and **dml ogit2**). The variable labels are used in the output table (unless **no label** is chosen), providing more intelligible variable descriptions than 8-letter names. Note that if different variables are assigned the same variable label (not usually done intentionally), and more than one regression is appended together, the coefficients and t statistics will not be properly ordered. The solution is to use distinct variable labels or the **no label** option.

If filename is specified without an extension, **.out** is assumed.

If a *varlist* is specified, only the regression coefficients corresponding to the variables in *varlist* will be included in the table. The dependent variable name should not be included in the *varlist* since it has no regression coefficient. With an explicit *varlist* the intercept coefficient will still be included unless the **nocons** option is chosen. An explicit *varlist* is useful, for example, for excluding numerous dummy variable coefficients.

Many Stata estimation commands make it possible to exponentiate the coefficients under the procedure-specific names of odds ratios, hazard ratios, relative risk ratios, etc. Since Stata leaves behind no evidence of whether the user has chosen to exponentiate the coefficients displayed by the original estimation, the user must respecify this choice in **outreg** with the **eform** option. This is required even after the **stcox** command which by default reports coefficients in hazard ratio form.

A growing number of Stata commands, most of them STB additions, report the marginal effects of changes in the independent variables. For most of these commands (**dprobit**, **dlogit2**, **dprobit2**, and **dml ogit2**) **outreg** will automatically report the marginal effects. The commands **truncreg**, **marginal** and **dtobit**

report both regression coefficients and marginal effects, though, so the user must specify the margin option for **outreg** to report the marginal effects.

## Options

1. Text-related options
2. Coefficient options
3. Options for t statistics, standard errors, etc.
4. Other statistics options
5. Other options

### 1. Text-related options

**no label** specifies that variable names rather than variable labels be used to identify coefficients. It also suppresses the value labels of the dependent variable in **mlogit**, **svylog**, and **dmlogit2**.

**title**(textlist) specifies a title or titles at the top of the regression table. The maximum title length is 80 characters. Additional characters will be cut off. Longer titles can be put in two or more title lines. When regression results are appended together, the table title(s) must be specified in the first **outreg** call; titles specified in subsequent **outreg . . . append** calls will be ignored. Note that when converting the **outreg** text output to a table in a word processor or a spreadsheet, it is easier to leave out the title row out of the text selected for conversion.

**ctitle**(textlist) specifies the regression title above the coefficient column. By default if no column title is specified, the label or name of the dependent variable is displayed. Multiple column titles are only appropriate for multi-equation regressions, using one title per equation, and then only if not **onecol**.

**nonotes** specifies that notes explaining the t statistics (or standard errors, etc.) and asterisks not be included.

**addnote**(textlist) specifies user-added notes to be displayed in new lines at the bottom of the **outreg** table. When regression results are appended together, **addnote** must be specified in the first **outreg** call; **addnotes** specified in subsequent **outreg . . . append** calls will be ignored. **addnote** is consistent with **nonotes**. A blank line can be inserted by including "" as a note (see example below).

Technical Note: Text which includes quotation marks within the text (by means of double quotation as in "This is "quoted" text") in **title**, **ctitle**, and **addnote** displays correctly in single regression tables but does not display correctly when subsequent regressions are **appended**.

### 2. Coefficient options

**bdec**(numlist) specifies the number of decimal places reported for coefficient estimates (the b's). It also specifies the decimal places reported for standard errors or confidence intervals if **se** or **ci** is chosen. The default value for **bdec** is 3. The minimum value is 0 and the maximum value is 11. If one number is specified in the numlist, it will apply to all coefficients. If multiple numbers are specified in the numlist, the first number will determine the decimals reported for the first coefficient, the second number, the decimals for the second coefficient, etc. If there are fewer numbers in the numlist than coefficients, the last number in the numlist will apply to all the remaining coefficients.

**bfmt**(textlist) specifies the format type for coefficient estimates (and standard errors or confidence intervals, if **se** or **ci** is chosen). Possible format types are

- e - scientific notation; e.g. 1.00e+3
- f or fc - fixed format (with commas for thousands with fc)
- g or gc - general format (with commas for thousands with gc)

The default type for **bfmt** is **fc**. If multiple format types are specified, they are applied to the coefficients the way that multiple **bdec** parameters are applied. This option is mainly to allow scientific notation (e). For an explanation of Stata numeric formats, see [U] 15.5.1 Numeric formats.

**nocons** specifies that the intercept (constant) coefficient estimate not be reported. This is not needed when the preceding estimation has no intercept coefficient.

**coefastr** specifies that asterisks for significance levels are appended to regression coefficients rather than to t statistics or standard errors.

**eform** specifies that the exponentiated form of the coefficients be reported. This corresponds to the **or** option for **llogit**, **cllogit**, and **gllogit** estimation, **irr** for poisson estimation, **rrr** for **mllogit**, **hr** for COX and **stcox** hazard models, and **eform** for **xtgee**, but it can be used to exponentiate the coefficients after any estimation. Exponentiation of coefficients is explained in [R] maximize - methods and formulas. Note that the default form of **stcox** output displayed by Stata is the hazard rate form, so to save the same numbers in **outreg** use the **eform** option.

**marginal[(u|c|p)]** specifies that the marginal effects rather than the coefficient estimates are reported. It can be used after **truncreg**, **marginal** from STB 52 or **dtobit** from STB 56. One of the parameters u, c, or p is required after **dtobit**, corresponding to the unconditional, conditional, and probability marginal effects, respectively. It is not necessary to specify **marginal** after **dprobit**, **dllogit2**, **dprobit2**, and **dmllogit2**.

### 3. Options for t statistics, standard errors, etc.

**se** specifies that standard errors rather than t statistics are reported. The decimal places displayed are those set by **bdec**.

**pvalue** specifies that p values (of t statistics) rather than t statistics are reported. The decimal places displayed are set by **tdec**.

**ci** specifies that confidence intervals of coefficients rather than t statistics are reported. The decimal places displayed are those set by **bdec**.

**level(#)** specifies the confidence level, in percent, for confidence intervals. The default is level(95) or as set by **set level**; see [U] 23.5 Specifying the width of confidence intervals. **level** does not affect the confidence levels of asterisks.

**beta** asks that normalized beta coefficients be reported rather than t statistics (see the beta option of **regress**). The decimal places displayed are those set by **bdec**.

**tdec(#)** specifies the number of decimal places reported for t statistics or for p values if **pvalue** is specified. It also specifies the decimal places reported for R-squared or adjusted R-squared if they are not specified in **rdec**. The default value for **tdec** is usually 2, but 3 if **pvalue** is specified. The minimum value is 0 and the maximum value is 11.

**noparen** specifies that no parentheses be placed around t statistics, standard errors, etc.

**bracket** specifies that square brackets [] be used rather than parentheses () around t statistics, standard errors, etc.

**noaster** specifies that no asterisks denoting 1% and 5% significance levels be reported.

**3aster** specifies 3 asterisks for 1%, 2 asterisks for 5%, and 1 asterisk for 10% significance levels.

**10pct** specifies a "+" for 10 significance levels in addition to the default 2 asterisks for 1%, 1 asterisk for 5% significance levels (unless **sigymb** is specified - see below).

**sigymb(textlist)** specifies symbols for 1% and 5% significance levels (and 10% significance level if **10pct** is also chosen). The specified symbols replace the asterisks \*\* and \*. Quotation marks around the new symbols are optional if the characters ",", and ")" are avoided. Here are two examples:

```
. outreg using table1, sigymb(++,+)
```

```
. outreg using table1, sigsymb(" (1%)", " (5%)", " (10%)") 10pct
```

Omitting symbols will prevent the significance level from being labeled (see also **noaster**). The following example will display only 1% significance levels:

```
. outreg using table1, sigsymb(*)
```

#### 4. Statistics options

**nonobs** specifies that the number of observations in the estimation not be reported.

**noni** specifies that the number of groups in a panel data regression not be reported (e.g. the number of groups specified by the `i()` variable in `xtreg`). This option has an effect only after `xt` regression commands.

**nor2** specifies that no R-squared (or adjusted R-squared) be reported. This option has an effect only if Stata calculates a true R-squared.

**adj r2** specifies that the adjusted R-squared be reported rather than the regular R-squared (in regressions where the adjusted R-squared is defined).

**rdec**(#) specifies the number of decimal places reported for the R-squared or adjusted R-squared. The default value for **rdec** is the value for **tdec**. The minimum value is 0 and the maximum value is 11.

**addstat**("text" , # [, "text", # ...] ) specifies user-added statistics to be displayed in new lines below the R-squared (if shown). The user must specify both a name and a value for the statistic. Users can report significance levels of test statistics as a second statistic to be shown on the line below the first statistic (see example below).

**adec**(numlist) specifies the number of decimal places reported for user-added statistics (in **addstat**). The default value for **rdec** is the value for **tdec**. The minimum value is 0 and the maximum value is 11. If one number is specified in the numlist, it will apply to all statistics. If multiple numbers are specified in the numlist, they are applied to the user-added statistics as in **bdec**.

**onecol** specifies that multiequation models (e.g. `ml ogit`, `reg3`, `heckman`) be formatted in one column rather than the default of multiple columns, one column per equation. Extra statistics included in the `e(b)` vector are also reported.

**xstats** specifies that the extra statistics included in the `e(b)` matrix be reported. Extra statistics for multi-equation models (i.e. `heckman`, `heckprob`, and `bi probit`) are not reported - use **addstat** or **onecol** . If there are no extra statistics in the `e(b)` matrix, **xstats** is ignored. This option is largely superseded by **addstat**.

#### 5. Other options

**comma** specifies that the ASCII file output be separated by commas rather than by tabs. This can cause problems if any of the user-defined text has commas in it (such as variable labels, **title**, **ctitle**, **addstat**, or **addnote**). If that is the case, consider using **quote** as well.

**replace** specifies that it is okay to replace filename if it already exists.

**append** specifies that new estimation output be appended to an existing output file. In general, the same **outreg** options should be used in the original regression output and each appended regression. The notes at the

bottom of the table explaining the t statistics or standard errors and asterisks are correct for the first estimation in the output file. If subsequently appended estimation results use different options (such as a switch to **noaster**, or change the estimation's **robust** option), the notes will not be appropriate for all the columns. This problem can be addressed with a combination of **nonotes** and **addnote**.

## Examples

### outreg defaults

**outreg** is used after an estimation command (similar to **predict**). Take a simple regression using Stata's **auto.dta** dataset.

```
. use c:\stata\auto, clear
(1978 Automobile Data)
```

```
. regress mpg foreign weight
```

Source	SS	df	MS	Number of obs = 74		
Model	1619.2877	2	809.643849	F( 2, 71) = 69.75		
Residual	824.171761	71	11.608053	Prob > F = 0.0000		
Total	2443.45946	73	33.4720474	R-squared = 0.6627		
				Adj R-squared = 0.6532		
				Root MSE = 3.4071		

  

mpg	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
foreign	-1.650029	1.075994	-1.533	0.130	-3.7955	.4954421
weight	-.0065879	.0006371	-10.340	0.000	-.0078583	-.0053175
_cons	41.6797	2.165547	19.247	0.000	37.36172	45.99768

The simplest form of **outreg** just requires an output file name, in this case "auto1".

```
. outreg using auto1
```

Usually one would load the output file **auto1.out** into a word processor as a table. We can see the results of **outreg** within Stata using the **type** command. **outreg** output files ordinarily look jumbled when displayed using **type** so to improve the readability of these examples we have added spaces to make the columns line up properly.

```
. type auto1.out
```

	Mileage (mpg)
Car type	-1.650
	(1.53)
Weight (lbs.)	-0.007
	(10.34)**
Constant	41.680
	(19.25)**

```

Observations      74
R-squared          0.66
Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

```

Note that **outreg** uses the variable labels in place of variable names so that the independent variable mpg listed above the column of regression coefficients uses the label "Mileage (mpg)", the variable foreign uses its label "Car type", etc. The user can change the variable labels before invoking **outreg** to provide the desired captions for the **outreg** results table.

### Decimal places of coefficients; column titles

By default the regression coefficients are shown with three decimal places, but this isn't very satisfactory for the weight variable in the regression above. The weight coefficient is statistically significant, but only one non-zero digit is displayed. We could use the option **bdec(5)** to display 5 decimal places for all the coefficients, but we can do better. To display five decimal places of the weight coefficient only and two decimal places of the other coefficients, we use **bdec(2, 5, 2)**. We also add a column title "Base case (mpg)" to distinguish this regression from a second regression we will append to the table in the next example below. Quotation marks are required around the column title because it contains parentheses (they are also required if the text contains commas).

```

. outreg using auto2, bdec(2,5,2) ctitle("Base case (mpg)")
. type auto2.out

```

	Base case (mpg)
Car type	-1.65 (1.53)
Weight (lbs.)	-0.00659 (10.34)**
Constant	41.68 (19.25)**
Observations	74
R-squared	0.66
Absolute value of t-statistics in parentheses	
* significant at 5%; ** significant at 1%	

### Appending two regression tables together; number formats for coefficients

Researchers presenting their results commonly combine several related estimations in the same table. **outreg** combines results with the **append** option. First we add a quadratic term for the weight variable in a new regression.

```

. gen weightsq = weight^2
. label var weightsq "Weight squared"
. regress mpg foreign weight weightsq

```

Source	SS	df	MS	
Model	1689.15372	3	563.05124	
Residual	754.30574	70	10.7757963	

  

Number of obs =	74
F( 3, 70) =	52.25
Prob > F =	0.0000
R-squared =	0.6913

-----+-----					Adj R-squared = 0.6781	
Total		2443.45946	73	33.4720474	Root MSE = 3.2827	
-----+-----						
mpg		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+-----						
foreign		-2.2035	1.059246	-2.080	0.041	-4.3161 - .0909003
weight		-.0165729	.0039692	-4.175	0.000	-.0244892 - .0086567
weightsq		1.59e-06	6.25e-07	2.546	0.013	3.45e-07 2.84e-06
_cons		56.53884	6.197383	9.123	0.000	44.17855 68.89913
-----+-----						

The weightsq coefficient is so small that it is difficult to display without scientific notation (as displayed in the regress output). By default, **outreg** displays coefficients in fixed format. We can change the weightsq coefficient numeric format to scientific (while keeping the rest fixed) with the **bfmt(f, f, e, f)** option. To specify the decimal places for the coefficients, we could use the option **bdec(2, 5, 2, 2)**, but the last 2 is unnecessary because the last decimal place value applies to all the rest of the coefficients. We now **append** the results of the new regression to the previous regression results.

```
. outreg using auto2, bdec(2,5,2) bfmt(f,f,e,f) ctitle("Quadratic (mpg)") append
. type auto2.out
```

	(1) Base case (mpg)	(2) Quadratic (mpg)
Car type	-1.65 (1.53)	-2.20 (2.08)*
Weight (lbs.)	-0.00659 (10.34)**	-0.01657 (4.18)**
Weight squared		1.59e-06 (2.55)*
Constant	41.68 (19.25)**	56.54 (9.12)**
Observations	74	74
R-squared	0.66	0.69
Absolute value of t statistics in parentheses		
* significant at 5%; ** significant at 1%		

Technical Note: Originally I created an example where the "Base case" regression was **regress mpg weight foreign** and the "Quadratic" regression was **regress mpg weight weightsq foreign**. The **outreg** table ordered the coefficients:

```
weight foreign weightsq
```

because all the regressors in the first estimation are listed before any new regressors in the appended estimation. Most people would prefer to list the weightsq coefficient immediately after the weight coefficient since they are related. There are three ways to get this result. The first is shown in the example above: make weight the last regressor in the first estimation and weightsq the first new regressor in the second estimation. The second way is to keep the order of the regressors unchanged in the estimation but include a *varlist* in the first **outreg** to reorder the coefficients:

```
. outreg foreign weight using auto2, bdec(2,5,2) title("base case (mpg)")
```

The third way and the only way to obtain the coefficient ordering

```
weight weightsq foreign
```



in the **outreg** table (given that `weightsq` is not include in the first estimation) is to reorder the rows by hand after the table is created by **outreg**.

### Typical format for economics journals: standard errors, brackets, and no asterisks

Economics journals often prefer standard errors to t statistics and don't use asterisks to denote statistical significance. The **se** option replaces t statistics with standard errors, the **bracket** option replaces parentheses with brackets, and the **noaster** option suppresses asterisks. The **title** option adds a title at the top of the **outreg** table. Note that the decimal places specified by the **bdec** option apply to both the coefficients and the standard errors.

```
. regress mpg foreign weight
      (output omitted)

. outreg using auto3, se bdec(2,5,2) bracket noaster /*
> */ title("Please, no t statistics - we're economists")

. type auto3.out
      Please, no t statistics - we're economists
                                Mileage (mpg)
Car type                        -1.65
                                [1.08]
Weight (lbs.)                   -0.00659
                                [0.00064]
Constant                        41.68
                                [2.17]
Observations                     74
R-squared                       0.66
Standard errors in brackets
```

### Using a varlist, no constant, and adding an explanatory note

Specifying a *varlist* in **outreg** can be convenient to limit the output table to only the essential coefficients. For example, we may want to control for the influence of dummy variables, but not report their estimated coefficients. As an example, we create categorical dummy variables for the five repair scores in the `auto.dta` dataset and add them to our simple regression above.

```
. tab rep78, gen(repair)
      (output omitted)

. regress mpg foreign weight repair1-repair4
      (output omitted)
```

If the only coefficients of interest are those of `foreign` and `weight`, they can be specified in the *varlist*. The constant in the regression will still be reported in the **outreg** table unless suppressed with the **nocons** option. The constant coefficient is not very meaningful in this case when dummy variables are included in the regression but their coefficients are not reported, so we suppress it. We also add a note to the bottom of the table explaining that the dummy variable coefficients are not shown, using the **addnote** option. Note that since the text in **addnote** does not contain parentheses or commas it does not need quotation marks. The **outreg** command is too long for

one line, so it uses the Stata comment symbols (`/* ... */`) to comment out the end of the line and continue the command syntax on the next line.

```
. outreg weight foreign using auto4, nocons /*
>  */ addnote(Coefficients for repair dummy variables not shown)

. type auto4.out
```

	Mileage (mpg)
Weight (lbs.)	-0.006 (9.16)**
Car type	-2.923 (2.18)*
Observations	69
R-squared	0.69

Absolute value of t statistics in parentheses  
 \* significant at 5%; \*\* significant at 1%  
 Coefficients for repair dummy variables not shown

### Added statistics and notes

**outreg** allows for a number of statistics besides coefficients to be included in output tables (number of observations, R-squared, etc.). Users may nevertheless want to add a range of additional statistics to their estimation tables at different times, so the **addstat** option allows the inclusion of arbitrary user-specified statistics below the estimated coefficients (and below number of observations and R-squared, if reported). Say we wanted to test the equality of two of the estimated coefficients and report the results in the table. After a simple regression, the **test** command will report an F statistic and the associated p value in the macros `r(F)` and `r(p)`.

```
. regress mpg foreign weight length
(output omitted)

. test foreign length
(output omitted)
```

**addstat** can report include multiple statistics, each one of which is displayed on a separate line. The arguments for each statistic are a text string (the name of the statistic) and number (the statistic value). To report just the F statistic the **addstat** option might be **addstat(F test: Car type=Length=0, r(F))**. Below we include the p value of the F statistic as a second statistic. The **adec** option specifies the reported decimal places for each statistic.

The **outreg** command below also includes another example of the **addnote** option, first inserting a blank line after the rest of the table output with an empty string (`""`), followed by the time the program was run (from the built-in Stata functions `$_TIME` and `$_DATE`), and the dataset used by the estimation (from the Stata function `$_FN`).

```
. outreg using auto5, /*
>  */ addstat(F test: Car type=Length=0, r(F), Prob > F, r(p)) adec(2,3) /*
>  */ addnote("", "Run at $_TIME, $_DATE", Using data from $_FN)

. type auto5.out
```

```

                Mileage (mpg)
Car type             -1.708
                     (1.60)
Weight (lbs.)        -0.004
                     (2.73)**
Length (in.)         -0.083
                     (1.51)
Constant             50.537
                     (8.09)**
Observations         74
R-squared             0.67
F test: Car type=Length=0  2.34
Prob > F              0.104
Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

```

```

Run at 23:23:08, 17 Nov 2000
Using data from c:\stata\auto.dta

```

Stata return value macros `r()`, `e()`, or `s()` can be included directly in the **addstat** option in place of statistic values as shown above. Another example would be to report a pseudo R-squared after a logit estimation, which **outreg** does not otherwise report. The **addstat** option could be **addstat(Pseudo R-squared, e(r2\_p))**. To see all the statistics available in memory after an estimation command, type `estimates list` or `est li`, and after an r-class command (notably most tests and `summarize`), type `return list` or `ret li`.

In some cases it is better to save the value of a previously calculated statistic in a local macro and then put the macro value into **addstat**. This would be the case, for example, if after a regression two test commands were run which return `r()` values, both of which are to be reported with the regression results in **outreg**. The second test command would wipe out the `r()` values from the first test command. Say both test commands (called `test1` and `test2`) created F statistics, then the user could save the first F statistic in a local macro:

```

. regress y x1 x2
. test1 x1
. local F1 = r(F)
. test2 x2
. outreg using 2test, addstat(Test1 F, `F1', Test2 F, r(F))

```

## Multiequation models and column titles

The creation of output tables for multiequation models is straightforward with **outreg**. Each equation has its own column in the table. To label the equation column headings with something other than the dependent variable labels, the user chooses the **ctitle** option with multiple text strings, as many strings as equations. The example below uses the `reg3` three-stage least squares estimation of the Klein macro model (see [R] `reg3`).

```

. reg3 (c p p1 w) (i p p1 k1) (wp y y1 yr), endog(w p y) exog(t wg g)
(output omitted - see [R] reg3, p. 148 for output)

. outreg using multieq, ctitle(Consumption Equation, Investment Equation, Wage
> Equation)

```

```
. type multi eq.out
```

	(1) Consumption Equation	(2) Investment Equation	(3) Wage Equation
profits	0.125 (1.16)	-0.013 (0.08)	
profits1	0.163 (1.62)	0.756 (4.94)**	
wagetot	0.790 (20.83)**		
capital1		-0.195 (5.99)**	
totinc			0.400 (12.59)**
totinc1			0.181 (5.31)**
year			0.150 (5.36)**
Constant	16.441 (12.60)**	28.178 (4.15)**	-287.223 (5.37)**
Observations	21	21	21

Absolute value of z statistics in parentheses  
 \* significant at 5%; \*\* significant at 1%

If the user prefers an **outreg** table with all the equations' coefficients in a single column after a multiequation estimation, the **onecol** option provides this.

## Exponential transformations of coefficients

As noted above, there is no way of knowing after an estimation command if the user chose to report the exponentiated form of coefficients. The user must choose the **eform** option in **outreg** to get the same form of the coefficients.

For duration models, the exponential form is known as the hazard ratio. For other models it is known as odds ratio, relative risk ratio, or incidence rate ratio.

The example here uses the panel Cox regression shown in [R] **stcox**.

```
. stcox load bearings, nolog
```

```
      failure _d: 1 (meaning all fail)
      analysis time _t: failtime
```

```
Cox regression -- Breslow method for ties
```

No. of subjects =	12	Number of obs =	12
No. of failures =	12		
Time at risk =	896		
		LR chi2(2) =	23.39

Log likelihood = -8.577853                      Prob > chi2 = 0.0000

-----						
	_t					
	_d	Haz. Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
-----						
load		1.52647	.2188172	2.951	0.003	1.152576 2.021653
bearings		.0636433	.0746609	-2.348	0.019	.0063855 .6343223
-----						

By default, `stcox` reports coefficients in hazard ratio form. However, **outreg** without the **eform** option will report the coefficients in unexponentiated form, not in hazard ratios.

```
. outreg using bearing
. type bearing.out
               _t
load              0.423
                 (2.95)**
bearings         -2.754
                 (2.35)*
Observations      12
Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%
```

**outreg** can create an output file with coefficients in hazard ratio form with the addition of the **eform** option. Since `stcox` does not tell us the name of the duration variable, we also add a column title **ctitle(failtime)**.

```
. outreg using bearing, eform ctitle(failtime) replace
. type bearing.out
               failtime
load              1.526
                 (2.95)**
bearings          0.064
                 (2.35)*
Observations      12
Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%
```

## Marginal Effects

A number of Stata commands (mostly STB additions) report the estimated marginal effects of coefficients. Most of the commands only report marginal effects, and the user need not do anything special when invoking **outreg**. Two recent STB commands, `truncreg`, `marginal` and `dtobit`, though, report both the coefficients and the marginal effects, so the user must tell **outreg** whether to report the marginal effects with the **marginal** option. After `truncreg`, `marginal`, the user specifies the **marginal** option without arguments in **outreg**. `dtobit`, on the other hand, calculates three different marginal effects. The user must specify which marginal effect **outreg** will report using the **marginal** option with the argument **u**, **c**, or **p** for the unconditional, conditional, or the probability uncensored, respectively.

We use Stata's auto dataset again to estimate a `tobit` model and calculate the marginal effects with `dtobit`.

```
. use c:\stata\auto, clear
(1978 Automobile Data)

. tobit mpg trunk weight, ll(17)
(output omitted)

. dtobit
```

Marginal Effects: Latent Variable

variable	dF/dx	Std. Err.	z	P> z	X_at	[ 95% C.I. ]
trunk	-.1487203	.1477163	-1.01	0.314	13.7568	-.438239 .140798
weight	-.0063328	.0008709	-7.27	0.000	3019.46	-.00804 -.004626
_cons	41.90603	2.094632	20.01	0.000	1.00000	37.8006 46.0114

Marginal Effects: Unconditional Expected Value

variable	dF/dx	Std. Err.	z	P> z	X_at	[ 95% C.I. ]
trunk	-.1243259	.1234866	-1.01	0.314	13.7568	-.366355 .117703
weight	-.005294	.0007281	-7.27	0.000	3019.46	-.006721 -.003867
_cons	35.03223	1.751052	20.01	0.000	1.00000	31.6002 38.4642

Marginal Effects: Conditional on being Uncensored

variable	dF/dx	Std. Err.	z	P> z	X_at	[ 95% C.I. ]
trunk	-.0926812	.0920555	-1.01	0.314	13.7568	-.273107 .087744
weight	-.0039465	.0005428	-7.27	0.000	3019.46	-.00501 -.002883
_cons	26.11546	1.305356	20.01	0.000	1.00000	23.557 28.6739

Marginal Effects: Probability Uncensored

variable	dF/dx	Std. Err.	z	P> z	X_at	[ 95% C.I. ]
trunk	-.009621	.0095561	-1.01	0.314	13.7568	-.028351 .009109
weight	-.0004097	.0000563	-7.27	0.000	3019.46	-.00052 -.000299
_cons	2.710991	.1355063	20.01	0.000	1.00000	2.4454 2.97658

The following **outreg** command will report the unconditional marginal effects.

```

. outreg using auto6, margin(u)
. type auto6.out

```

	Mi l eage (mpg)
Trunk space (cu. ft.)	-0.124 (1.01)
Wei ght (l bs.)	-0.005 (7.27)**
Constant	35.032 (20.01)**
Observati ons	74

Absolute value of z statistics in parentheses  
 \* signi fi cant at 5%; \*\* signi fi cant at 1%

Although the user can only choose a single kind of marginal effect to include in each **outreg** command after the **dtobi t** command, the user could use **outreg** several times with different marginal effects and append the results together into a single table.

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## Also see

STB: sg97 (STB-46, STB-49, STB-58)  
 Manual: [U] 23 Estimation and post-estimation commands  
 [U] 29 Overview of model estimation  
 [R] estimation commands

On-line: help for est, postfile, outfile, outsheet, save, modltbl;