Package 'erer'

April 18, 2022

Title Empirical Research in Economics with R

Version 3.1

Date 2022-04-18

Author Changyou Sun <cs258@msstate.edu>

Maintainer Changyou Sun <cs258@msstate.edu>

Depends R (>= 3.0.0), lmtest

Imports systemfit, tseries, urca

Suggests MASS

Description Functions, datasets, and sample codes related to the book of 'Empirical Research in Economics: Growing up with R' by Dr. Changyou Sun are included. Marginal effects for binary or ordered choice models can be calculated. Static and dynamic Almost Ideal Demand System (AIDS) models can be estimated. A typical event analysis in finance can be conducted with several functions included.

License GPL (>= 2)

LazyLoad yes

NeedsCompilation no

Repository CRAN

Date/Publication 2022-04-18 15:44:30 UTC

R topics documented:

erer-package 2
aiData 3
aiDiag 5
aiDynFit 6
aiElas 9
aiStaFit 10
aiStaHau 12
bsFormu 13
bsLag 14
bsStat 16

bsTab . . . 17
daBed . . . 19
daBedRaw . . . 20
daEsa . . . 22
daExp . . . 23
daIns . . . 24
daInsNam . . . 26
daLaw . . . 27
daPe . . . 28
daRoll . . . 29
download.lib . . . 30
evReturn . . . 31
evRisk . . . 34
head . . . 35
listn . . . 36
lss . . . 37
maBina . . . 38
maTrend . . . 40
ocME . . . 41
ocProb . . . 43
summary.aiFit . . . 45
systemfitAR . . . 46
ur.df2 . . . 48
write.list . . . 49

Index **51**

`erer-package` *Empirical Research in Economics with R*

Description

Functions, datasets, and sample codes related to the book of 'Empirical Research in Economics: Growing up with R' by Dr. Changyou Sun are included (ISBN 9780996585408). Marginal effects for binary or ordered choice models can be calculated. Static and dynamic Almost Ideal Demand System (AIDS) models can be estimated. A typical event analysis in finance can be conducted with several functions included.

Close to 100 sample programs and data sets are used in the book. They are included in the package folder on your local drive, e.g., c:/.../R-3.2.2/library/erer/doc/. Alternatively, download the tar.gz version of this package from the CRAN site to view them.

Details

Package:	erer
Type:	Package
Version:	3.1
Date:	2022-04-18

Depends:	R (>= 3.0.0), lmtest
Imports:	systemfit, tseries, urca
Suggests:	MASS
License:	GPL (>= 2)
LazyLoad:	yes

Author(s)

Changyou Sun (<cs258@msstate.edu>)

`aiData` *Transforming Raw Data for Static AIDS Model*

Description

This function transforms import values and quantities into a data format that are needed for a static AIDS model.

Usage

```
aiData(x, label, label.tot = "WD", prefix.value = "v",
  prefix.quant = "q", start = NULL, end = NULL, stone = TRUE,
  dummy = NULL, season = c("none", "m", "q"), ...)
```

Arguments

`x`	raw time series data such as `daBedRaw`.
`label`	names of supplying countries; this can be as long as needed.
`label.tot`	names of the world total (default label is "WD").
`prefix.value`	prefix for value variables.
`prefix.quant`	prefix for quantity varibles.
`start`	start date for the transformed time series; this can be used to select a smaller window; the default is the start date of the raw data `x`.
`end`	end date for the transformed time series.
`stone`	whether the Stond Price Index is constructed (default TRUE); if FALSE, the version of log-linear analog to the Paasche index with lagged budget shares in Moschini (1995) is used. See references for detail.
`dummy`	adding dummy variables if date ranges are provided as a list.
`season`	adding seasonality variables or not; if yes, either monthly dummy or quarterly dummy; this is prepared mainly for monthly data.
`...`	additional arguments to be passed.

Details

This transforms raw import data into a format needed for a static AIDS model. This separation of data prepraration from model fitting allows greater flexibility in using `aiStaFit` in estimating a static AIDS model. In addition, when the raw data contain zero, a small number is substituted to avoid NA when the price variable (value/quantity) is calculated. The values for the residual supplier will change when the `label` is different.

Value

Return a list object with two components:

`out`	a time series object ready for static AIDS models.
`share`	a time series object of the share data.
`price`	a time series object of the price data.
`quantity`	a time series object of the quantity data.
`value`	a time series object of the value data.
`m`	a vector of the total expenditure.
`call`	a record of the system call; this allows `update.default` to be used.

Methods

One method is defined as follows:

`print`**:** print the first several observations of the final data needed for the AIDS model.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Moschini, G. 1995. Units of measurement and the Stone index in demand system estimation. American Journal of Agricultural Economics 77(1):63-68.

Singh, K., M.M. Dey, and G. Thapa. 2011. An error corrected almost ideal demand system for crustaceans in the United States. Journal of International Food & Agribusiness Marketing 23(3):271-284.

Wan, Y., C. Sun, and D.L. Grebner. 2010. Analysis of import demand for wooden beds in the United States. Journal of Agricultural and Applied Economics 42(4):643-658.

See Also

`aiStaFit`; `daBedRaw`; `daBed`.

Examples

```
data(daBedRaw)
dumm <- list(dum1 = c(2003, 10, 2003, 10), dum2 = c(2004, 7, 2004, 7),
  dum3 = c(2005, 1, 2005, 1))
imp8 <- aiData(x = daBedRaw,
  label = c("CN", "VN", "ID", "MY", "CA", "BR", "IT"),
  label.tot = "WD", prefix.value = "v", prefix.quant = "q",
  start = c(2001, 1), end = c(2008, 12), dummy = dumm)
imp4 <- update(imp8, label = c("CN", "VN", "ID"))
imp5 <- update(imp4, label = c("CN", "VN", "ID", "MY"))
imp8; imp4; imp5
daTest <- imp8$out
colnames(daTest)[18:20] <- c("dum1", "dum2", "dum3")
head(daTest)

data(daBed)
head(daTest); head(daBed)
identical(daBed, daTest)
```

`aiDiag` *Diagnostic Statitics for Static or Dynamic AIDS Model*

Description

Report a set of diagnostic statistics for static or dynamic AIDS models

Usage

```
aiDiag(x, digits = 3, ...)
```

Arguments

`x`	an object of class `aiFit` from the function of `aiStaFit` or `aiDynFit`.
`digits`	number of digits used in rounding outputs.
`...`	additional arguments to be passed.

Details

Compute several diagnostic statistics for each equation in a AIDS model. Tests includes are BG, BP, RESET, and JB. See the reference paper for detail.

Value

Return a data frame object with the statistics and p values for the four tests by equation.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Wan, Y., C. Sun, and D.L. Grebner. 2010. Analysis of import demand for wooden beds in the United States. Journal of Agricultural and Applied Economics 42(4):643-658.

See Also

aiStaFit; aiDynFit.

Examples

```
# see the examples for 'aiDynFit'.
```

---

aiDynFit *Fitting a Dynamic AIDS Model*

Description

Estimate a dynamic AIDS model for a system.

Usage

```
aiDynFit(w, dum.dif = FALSE, AR1 = FALSE,
  rho.sel = c("all", "mean"), ...)
```

Arguments

w	a object of class aiStaFit.
dum.dif	a logical value (default of FALSE) of whether to take a difference on the dummy variables passed from w.
AR1	whether first-degree autocorrelation should be corrected.
rho.sel	if AR1 = TRUE, there are two ways of computing the autocorrelation coefficient.
...	additional arguments to be passed.

Details

This estimates a dynamic AIDS model. The residuals from the statis AIDS model are included. As it is programmed now, only one lag is allowed for the share variables on the right-hand side. Autocorrelation in the residuals can be corrected following the treatment in Berndt (1975).

Value

Return a list object of class "aiFit" and "aiDynFit" with the following components:

w	a object of class aiStaFit.
y	data for fitting the static AIDS model, passed down by w.
dum.dif	a logical value (default of FALSE) of whether to take a difference on the dummy variables passed from w.
daDyn	data for fitting the dynamic AIDS model.
share	names of shares by commodity, used as depedent variables.
price	names of prices by commodity, used as independent variables.
expen	names of expenditure variable.
shift	names of the shifters.
omit	names of the omitted share variable.
nOmit	position of the omitted share variable in the name of share variable.
hom	a logical value of homogeneity test.
sym	a logical value of symmetry test.
nShare	number of share variables.
nExoge	number of exogenous variables (lagged share, residual, expenditure, and shifters).
nParam	number of parameters in one equation.
nTotal	number of parameters in the whole system estimated.
formula	formula for estimating the system.
res.matrix	restriction matrix for hom or sym, or both.
res.rhs	right-hand values for tests of hom or sym, or both.
est	the dynamic AIDS model estimated.

Methods

One method is defined as follows:

print**:** print the first several observations of the final data.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Berndt, E.R., and N.E. Savin. 1975. Estimation and hypothesis testing in singular equation systems with autoregressive disturbances. Econometrica 43(5/6):937-957.

Wan, Y., C. Sun, and D.L. Grebner. 2010. Analysis of import demand for wooden beds in the United States. Journal of Agricultural and Applied Economics 42(4):643-658.

See Also

systemfitAR; aiStaFit; aiDiag; aiElas; summary.aiFit.

Examples

```
# --- Step 1: Read data
data(daExp, daBedRaw, daBed)

# --- Step 2: Hausman Test
# 2.1 Getting started with a static AIDS model
sh  <- c("sCN", "sVN", "sID", "sMY", "sCA", "sBR", "sIT", "sRW")
pr  <- c("lnpCN", "lnpVN", "lnpID", "lnpMY",
         "lnpCA", "lnpBR", "lnpIT", "lnpRW")
du3 <- c("dum1","dum2","dum3")
rSta <- aiStaFit(y = daBed, share = sh, price = pr, shift = du3,
  expen = "rte", omit = "sRW", hom = TRUE, sym = TRUE)
summary(rSta)

# The following steps should work. It takes about 20 seconds.
## Not run:
# 2.2 The final Hausman test and new data
(dg <- daExp[, "dg"])
rHau <- aiStaHau(x = rSta, instr = dg, choice = FALSE)
names(rHau); colnames(rHau$daHau); colnames(rHau$daFit); rHau
two.exp <- rHau$daFit[, c("rte", "rte.fit")]
bsStat(two.exp, digits = 4)
plot(data.frame(two.exp)); abline(a = 0, b = 1)
daBedFit <- rHau$daFit

# --- Step 3: Static and dynamic AIDS models
# 3.1 Diagnostics and coefficients
hSta  <- update(rSta, y = daBedFit, expen = "rte.fit")
hSta2 <- update(hSta, hom = FALSE, sym = FALSE)
hSta3 <- update(hSta, hom = FALSE, sym = TRUE)
hSta4 <- update(hSta, hom = TRUE,  sym = FALSE)
lrtest(hSta2$est, hSta$est)
lrtest(hSta2$est, hSta3$est)
lrtest(hSta2$est, hSta4$est)

hDyn  <- aiDynFit(hSta)
hDyn2 <- aiDynFit(hSta2); lrtest(hDyn2$est, hDyn$est)
hDyn3 <- aiDynFit(hSta3); lrtest(hDyn2$est, hDyn3$est)
hDyn4 <- aiDynFit(hSta4); lrtest(hDyn2$est, hDyn4$est)

(table.2 <- rbind(aiDiag(hSta), aiDiag(hDyn)))
(table.3 <- summary(hSta))
(table.4 <- summary(hDyn))

# 3.2 Elasticity calculation
es <- aiElas(hSta); esm <- es$marsh
ed <- aiElas(hDyn); edm <- ed$marsh
```

```
esm2 <- data.frame(c(esm[1:2, 2], esm[3:4, 3],
  esm[5:6, 4], esm[7:8, 5], esm[9:10, 6], esm[11:12, 7],
  esm[13:14, 8], esm[15:16, 9]))
edm2 <- data.frame(c(edm[1:2, 2], edm[3:4, 3],
  edm[5:6, 4], edm[7:8, 5], edm[9:10, 6], edm[11:12, 7],
  edm[13:14, 8], edm[15:16, 9]))
eEM <- cbind(es$expen, esm2, ed$expen[2], edm2)
colnames(eEM) <- c("Country", "LR.expen", "LR.Marsh",
  "SR.expen", "SR.Marsh")
(table.5 <- eEM[-c(15:16),])
(table.6a <- es$hicks[-c(15:16), -9])
(table.6b <- ed$hicks[-c(15:16), -9])

## End(Not run)
```

`aiElas` *Computing Elasticity for Static or Dynamic AIDS Models*

Description

Calculate expenditure elasticity, Marshalllian price elasticity, Hicksian price elasticity, and their variances for static or dynamic AIDS Models.

Usage

```
aiElas(z, ...)
```

Arguments

`z`	an object of class `aiFit` from the function of `aiStaFit` or `aiDynFit`.
`...`	additional arguments to be passed to `bsTab`, e.g., digits = 3.

Details

Calculate expenditure elasticity, Marshalllian price elasticity, and Hicksian price elasticity for static or dynamic AIDS Models. The related variance, t-ratio, p-value, and significance are also reported.

Value

Return a list object with the following components:

`name`	name of the share variables; the omitted share name is the last one.
`expen`	expenditure elasticity and related statistics.
`marsh`	Marshalllian price elasticity and related statistics.
`hicks`	Hicksian price elasticity and related statistics.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Wan, Y., C. Sun, and D.L. Grebner. 2010. Analysis of import demand for wooden beds in the United States. Journal of Agricultural and Applied Economics 42(4):643-658.

See Also

aiStaFit; aiDynFit.

Examples

```
# see the examples for 'aiDynFit'.
```

---

aiStaFit *Fitting a Static AIDS Model*

Description

Estimate a static AIDS model for a system.

Usage

```
aiStaFit(y, share, price, expen, shift = NULL, omit = NULL,
  hom = TRUE, sym = TRUE, AR1 = FALSE, rho.sel = c("all", "mean"), ...)
```

Arguments

y	a multiple time series data.
share	names of the share variables.
price	names of the price variables.
expen	name of the expenditure variables.
shift	names of the shifter variables.
omit	name of the share variable omitted; if not supplied, this is the last one of share.
hom	a logical value of homogeneity test.
sym	a logical value of symmetry test.
AR1	whether first-degree autocorrelation should be corrected.
rho.sel	if AR1 = TRUE, there are two ways of computing the autocorrelation coefficient.
...	additional arguments to be passed.

Details

This estimates a static AIDS model. The data supplied should be in the final format. Autocorrelation in the residuals can be corrected following the treatment in Berndt (1975).

Value

Return a list object of class "aiFit" and "aiStaFit" with the following components:

`y`	data for fitting the static AIDS model.
`share`	names of the share variables.
`price`	names of the price variables.
`expen`	name of the expenditure variables.
`shift`	names of the shifter variables.
`omit`	name of the share variable omitted; if not supplied, this is the last one of `share`.
`nOmit`	position of the omitted share variable in the name of share variable.
`hom`	a logical value of homogeneity test.
`sym`	a logical value of symmetry test.
`nShare`	number of share variables.
`nExoge`	number of exogenous variables (lagged share, residual, expenditure, and shifters).
`nParam`	number of parameters in one equation.
`nTotal`	number of parameters in the whole system estimated.
`formula`	formula for estimating the system.
`res.matrix`	restriction matrix for `hom` or `sym`, or both.
`res.rhs`	right-hand values for tests of `hom` or `sym`, or both.
`est`	the static AIDS model estimated.
`AR1`	a logical value whether autocorrelation is corrected.
`call`	a record of the system call; this allows `update.default` to be used.

Methods

One method is defined as follows. This is the print method related to three functions: `aiStaFit`, `aiDynFit`, and `aiStaHau`.

`print`**:** print the first several observations of selectec outputs.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Berndt, E.R., and N.E. Savin. 1975. Estimation and hypothesis testing in singular equation systems with autoregressive disturbances. Econometrica 43(5/6):937-957.

Wan, Y., C. Sun, and D.L. Grebner. 2010. Analysis of import demand for wooden beds in the United States. Journal of Agricultural and Applied Economics 42(4):643-658.

See Also

`aiDiag`; `aiElas`; `summary.aiFit`; `aiDynFit`; `aiStaHau`; `systemfitAR`.

Examples

```
# see the examples for 'aiDynFit'.
```

---

aiStaHau *Conducting a Hausman Test on a Static AIDS Model*

Description

Conduct a Hausman test on a static AIDS model and report the result of likelihood ratio test.

Usage

```
aiStaHau(x, instr, choice = FALSE,
  exog = c("none", "all", "partial"), shift.new = NULL)
```

Arguments

x	an object of class aiStaFit from a static AIDS model.
instr	a single time series data as instrument for the expenditure variable in AIDS model.
choice	a logical value of whether to take a difference on the right-hand price and instr variables.
exog	how the exogenous shift variables in the AIDS model should be included in the Hausman test; "none" for nothing; "all" for all the dummyr or seasonality variables; and "partial" for some.
shift.new	when exog is "partial", this argument should contain the list of shift variables.

Details

Conduct a Hausman test on a static AIDS model and report the result of likelihood ratio test. Note that logarithm is taken on every variable in the auxiliary regression. The dependant variable is the real total expenditure. The independant variables include the lagged value of the real total expenditure, the instrumental variable as supplied, the price variables, and some or all shift variables as included in the AIDS model.

Value

Return a data frame object with the statistics and p values for the four tests by equation.

daHau	data used in estimating the Hausman test.
formuHau	formula for estimating the Hausman test.
regHau	regression for the Hausman test.
daFit	revised data with the fitted value of expenditure included.
aiBase	the base static AIDs model estimated.
aiHaus	the reestimated static AIDS model using the fitted value of expenditure.
ratio	result of the likelihood ration test for the Hausman test.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Wan, Y., C. Sun, and D.L. Grebner. 2010. Analysis of import demand for wooden beds in the United States. Journal of Agricultural and Applied Economics 42(4):643-658.

See Also

aiStaFit; print.aiFit.

Examples

```
# see the examples for 'aiDynFit'.
```

---

bsFormu *Generating Formula for Models*

Description

Generate a single formula for models like `lm` or a list of formula for models like `systemfit`.

Usage

```
bsFormu(name.y, name.x, intercept = TRUE, ...)
```

Arguments

`name.y`	a character vector of variables names for dependent variables; when the length is more than one, there will a list of formula generated for each variable in the name.
`name.x`	a character vector of indepedent variables.
`intercept`	a logical value (default of TRUE) of whether to include intercept or not.
`...`	additional arguments to be passed.

Details

This function can generate a single formula for simple model like `lm` or a list of formula for systems (`systemfit`. Note that the right-hand side variables are the same for each dependent variable. If different, a `for` loop can be added by users to address that, as demonstrated by the example below.

Value

a single formula object or a list of formula objects.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

Examples

```
# fake data
y  <- c("y")
ym <- c("y1", "y2", "y3")
x <- c("x")
xAll <- c("x", "xx", "xxx", "xxxx")

bsFormu(name.y = y, name.x = x)
bsFormu(name.y = ym, name.x = xAll)
fm.ym <- bsFormu(name.y = ym, name.x = xAll, intercept = FALSE)
fm.ym

# If independent variables differ by equation,
# add a loop to address the differentiation.
xInd <- c("x1", "x2", "x3")
fm.ym <- list()
for (i in 1:length(ym)) {
    ny <- ym[i]
    nx <- c(xInd[i], xAll)
    fm.ym[[i]] <- bsFormu(name.y = ny, name.x = nx, intercept = FALSE)
}
fm.ym

# real data
data(daIns)
(xx <- colnames(daIns)[-c(1, 14)])
fm.ins <- bsFormu(name.y = "Y", name.x = xx, intercept = TRUE)
fm.ins
(ra <- glm(formula = fm.ins,
          family = binomial(link="logit"),
          data = daIns, x = TRUE))
```

---

bsLag *Lagged Time Series*

Description

Generate a set of lagged time series for time series data.

Usage

```
bsLag(h, lag, prefix = "", var.name, suffix = ".t_",
    include.orig = TRUE, by.lag = FALSE, ...)
```

Arguments

h	time series data
lag	number of lags
prefix	prefix for the name of lagged time series.
var.name	varible name of the lagged time series.
suffix	suffix of the name of lagged time series.
include.orig	logical value (default of TRUE) of whether to include the original series (i.e., lag zero) in the final output.
by.lag	logical value (default of FALSE) of whether to order the column by variable (FALSE) or by lag (TRUE).
...	additional arguments to be passed.

Details

The input data can be a single time series or a set of multiple time series data. The output is a set of lagged time series with the specified lag dimension. All the series are aligned with the shortest window so the loss of observations is equal to `lag`. The original series (e.g., without lag but just loss of beginning observations) can be included or excluded by setting the logical value of `include.org`.

The name of the output data is composed of four parts: `prefix`, `var.name`, `suffix`, and an index number of `lag`. Users can control the first three parts only because the lag number is added automatically. `prefix` and `suffix` can be fixed for all the output series. `var.name` provides some flexibility when `bsLag` is used within a function and the variable name is unknown *a priori*.

The column of the output can be ordered either by the variable name (e.g., diff.GA.t_0, diff.GA.t_1, diff.ND.t_0, diff.ND.t_1), or by the lag order ((e.g., diff.GA.t_0, diff.ND.t_0, diff.GA.t_1, diff.ND.t_1).

Value

Return a multiple time series object.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

Examples

```
# simple example
h1 <- ts(data=cbind(1:24), start=c(2001, 1), frequency=12)
h2 <- ts(data=cbind(1:24, 25:48), start=c(2001, 1), frequency=12)
h3 <- ts(data=cbind(1:4, 5:8, 9:12), start=c(2001, 1), frequency=4)
colnames(h2) <- c("aa", "bb")
colnames(h3) <- c("cc", "dd", "ee")
h1; h2; h3

bsLag(h=h1, lag=0, prefix="", suffix=".t_")
bsLag(h=h1, lag=2, prefix="price.", var.name="fl", suffix=".t_")
bsLag(h=h1, lag=2, prefix="price.", var.name="fl", suffix=".t_", by.lag=TRUE)
bsLag(h=h1, lag=23, prefix="price.", suffix=".t_", include.orig=FALSE)
```

```
bsLag(h=h2, lag=4, prefix="", suffix=".t_", include.orig = TRUE)
bsLag(h=h2, lag=4, prefix="", suffix=".t_", include.orig = FALSE)
bsLag(h=h2, lag=4, prefix="", suffix=".t_", include.orig = FALSE, by.lag=TRUE)
bsLag(h=h2, lag=0, prefix="", var.name=c("nc", "sc"), suffix=".t_")

bsLag(h=h3, lag=2, prefix="", suffix=".t_", include.orig=FALSE)
bsLag(h=h3, lag=1, prefix="", var.name=c("nd", "sd", "mi"), suffix=".lag.")
bsLag(h=h3, lag=2, prefix="NY.", suffix=".t_", by.lag=TRUE)
bsLag(h=h3, lag=3, prefix="NY.", suffix=".t_", include.orig=FALSE)

# with real data
data(daBedRaw)
small <- daBedRaw[, c("vCN", "qCN")]
(lag.small <- bsLag(h=small, lag=4))
colnames(lag.small)

resid <- residuals(lm(qCN ~ vCN, data = small))
res <- ts(resid, start=start(small), end=end(small),
    frequency=tsp(small)[3])
lag.res <- bsLag(h=res, lag=2, prefix="resid.", var.name="china")
str(lag.res)
head(lag.res)
tail(lag.res)
```

---

bsStat *Summary of Basic Statistics*

Description

Calcluate basic statistics of data.

Usage

```
bsStat(y, two = NULL, digits = c(2, 2), use = 'complete.obs',
  na.rm = TRUE, ...)
```

Arguments

y	input data for summary statistics.
two	a logical value of whether to report the correlation and summary statistics separately; if NULL and the number of variables is less than 11, its value will be set to TRUE.
digits	digits for the output data, one for correlation coefficients and the other for mean and others; if a single scalar is supplied, it will be used for both.
use	an argument for correlation coefficient; see cor for detail.
na.rm	an argument for mean, sd, min, and max.
...	additional arguments to be passed.

Details

Two set of summary statistics are generated. One is correlation coefficients and the other is mean, minimum, maximum, standard deviation, and number of observations. When `two` is unspecified and the number of variables is bigger than ten, the two sets are reported separately; otherwise, it is reported as a single data frame object.

Value

A dataframe or list of the summary statistics.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

Examples

```
data(daIns)
(sum.daIns <- bsStat(y=daIns, digits=c(3,2)))
```

---

bsTab *Generating Pretty Statistical Tables*

Description

Format statistics from regressions into pretty outputs

Usage

```
bsTab(w,
  need = c("1T", "1E", "2T", "2E", "3T", "3E", "4T", "4E", "5"),
  wrap.TE = c("(", "", "["),
  add.sig = c("coef", "TE"),
  percent = c(0.01, 0.05, 0.10),
  symbol = c("***", "**", "*", ""),
  digits = c(3, 3, 3, 3), ... )
```

Arguments

`w`	statistical results from regression models; an object of class `glm`, `lm`, and `systemfit` can be supplied directly, or a data frame with at least four columns with the sequence of estimates, errors, t-values, and p-values.
`need`	a choice of output formats; default of `1T` is one column with t ratio and significance symbols; 1 to 5 is the number of columns; T is t ratios; E is standard errors. This argument must be a character string.
`wrap.TE`	parentheses, none, or brackets can be used to enclose t ratios or standard errors; default value is parenthses for one-column format and none for other formats.

add.sig	a chacter string to indicate where to add the significance symbol, either to the coefficents ("coef") or the t-value and error ("TE").
percent	percentage values used to categorize p values.
symbol	symbols used to represent p-value categories; the default values can be changed to symbols like a, b, c, or different combinations of *.
digits	digits for outputs; the default values are 3, 3, 3, and 2 for estimate, error, t value, and p value, correspondingly. A single value like 4 can be supplied and it will be recycled for all of them.
...	additional arguments to be passed.

Details

Format statistics from regressions into tables that are often reported in economic journals. The column of 'Variable' in the outuput is the row names of the input data so the raw data should contain meaningful rownames. Besides the variable name column, the maximum number of output is five columns: estimate, error, t ratio, p value, and significance. wrap.TE and add.sig are only valid for column widths of 1 and 2.

Value

A dataframe of statistical results.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

Examples

```
# a simulated data
tes <- data.frame(est = c(4, 56, 12), err = c(0.3, 0.56, 0.789),
  t.rat = c(2.56, 7.9, 1.2), p.val = c(0.002, 0.23, 0.061))
tes
bsTab(tes)
bsTab(w = tes, need = "2E")

# real data
data(daIns)
ra <- glm(formula = Y ~ Injury + HuntYrs + Nonres +
                    Lspman + Lnong + Gender + Age +
                    Race + Marital + Edu + Inc + TownPop,
          family = binomial(link="logit"),
          data = daIns, x = TRUE)
(ca <- data.frame(summary(ra)$coefficients))

# an object of class 'glm' as input
bsTab(w = ra, add.sig = "TE")
bsTab(w = ra, wrap.TE = "[")
bsTab(w = ra, need = "5")
bsTab(w = ra, need = "4T", wrap.TE = "[")
```

```
final <- bsTab(w = ra, need = "3T",
  percent = c(0.01, 0.05, 0.10),
  symbol = c("a", "b", "c", ""), digits = 4)
final
print(final, right = FALSE)

# any matrix with at least four columns can be supplied
cbind(bsTab(ca), bsTab(ra))
```

---

daBed *Transformed Wooden Beds Import Data for Static AIDS Models*

Description

This data set contains transformed values related to wooden beds imports by the United States from January 2001 to December 2008. There are 96 observations and 20 variables.

sCN	monthly import share of wooden beds from China
sVN	monthly import share of wooden beds from Vietnam
sID	monthly import share of wooden beds from Indonesia
sMY	monthly import share of wooden beds from Malaysia
sCA	monthly import share of wooden beds from Canada
sBR	monthly import share of wooden beds from Brazil
sIT	monthly import share of wooden beds from Italy
sRW	monthly import share of wooden beds from the rest of world
rte	real total expenditure in logarithm
lnpCN	monthly import price of wooden beds from China in logarithm
inpVN	monthly import price of wooden beds from Vietnam in logarithm
lnpID	monthly import price of wooden beds from Indonesia in logarithm
lnpMY	monthly import price of wooden beds from Malaysia in logarithm
lnpCA	monthly import price of wooden beds from Canada in logarithm
inpBR	monthly import price of wooden beds from Brazil in logarithm
lnpIT	monthly import price of wooden beds from Italy in logarithm
lnpRW	monthly import price of wooden beds from the rest of world in logarithm
dum1	a pulse dummy variable (1 for October 2003, 0 otherwise)
dum2	a pulse dummy variable (1 for July 2004, 0 otherwise)
dum3	a pulse dummy variable (1 for January 2005, 0 otherwise)

Usage

```
data(daBed)
```

Format

Monthly time series from Janurary 2001 to December 2008 with 96 observations for each of the 20 variables.

Details

This is the transformated data set for static AIDS model. The transformation detail is described in Wan et al. (2010).

Source

U.S. ITC, 2010. Interactive tariff and trade data web. US International Trade Commission (Assecced on March 1, 2010).

References

Wan, Y., C. Sun, and D.L. Grebner. 2010. Analysis of import demand for wooden beds in the United States. Journal of Agricultural and Applied Economics 42(4):643-658.

See Also

aiStaFit; daBedRaw.

Examples

```
data(daBed)
class(daBed); dim(daBed); colnames(daBed)
daBed
```

---

daBedRaw *Wooden Beds Import Data*

Description

This data set contains a mulitiple time series related to wooden beds imports by the United States. The time covered is January 1996 to December 2008 with 156 observations. There are 34 variables in total: 17 import values (dollars) and 17 import quantities (dollars / piece). In total, 16 countries are covered and the world total is also reported.

vBR	cost-insurance-freight import values in dollar from Brazil
vCA	cost-insurance-freight import values in dollar from Canada
vCN	cost-insurance-freight import values in dollar from China
vDK	cost-insurance-freight import values in dollar from Denmark
vFR	cost-insurance-freight import values in dollar from France
vHK	cost-insurance-freight import values in dollar from Hong Kong
vIA	cost-insurance-freight import values in dollar from India
vID	cost-insurance-freight import values in dollar from Indonesia
vIT	cost-insurance-freight import values in dollar from Italy
vMY	cost-insurance-freight import values in dollar from Malaysia
vMX	cost-insurance-freight import values in dollar from Mexico
vPH	cost-insurance-freight import values in dollar from Philippines
vTW	cost-insurance-freight import values in dollar from Taiwan

vTH	cost-insurance-freight import values in dollar from Thailand
vUK	cost-insurance-freight import values in dollar from United Kingdom
vVN	cost-insurance-freight import values in dollar from Vietnam
vWD	cost-insurance-freight import values in dollar from World in total
qBR	quantity in piece from Brazil
qCA	quantity in piece from Canada
qCN	quantity in piece from China
qDK	quantity in piece from Denmark
qFR	quantity in piece from France
qHK	quantity in piece from Hong Kong
qIA	quantity in piece from India
qID	quantity in piece from Indonesia
qIT	quantity in piece from Italy
qMY	quantity in piece from Malaysia
qMX	quantity in piece from Mexico
qPH	quantity in piece from Philippines
qTW	quantity in piece from Taiwan
qTH	quantity in piece from Thailand
qUK	quantity in piece from United Kingdom
qVN	quantity in piece from Vietnam
qWD	quantity in piece from World in total

Usage

```
data(daBedRaw)
```

Format

Monthly time series from Janurary 1996 to December 2008 with 156 observations for each of the 34 variables.

Details

Under the Harmonized Tariff Schedule (HTS) system, the commodity of wooden beds is classified as HTS 9403.50.9040. The monthly cost-insurance-freight values in dollar and quantities in piece are reported by country from U.S. ITC (2010).

Source

U.S. ITC, 2010. Interactive tariff and trade data web. US International Trade Commission (Assecced on March 1, 2010).

References

Wan, Y., C. Sun, and D.L. Grebner. 2010. Analysis of import demand for wooden beds in the United States. Journal of Agricultural and Applied Economics 42(4):643-658.

See Also

aiStaFit; daBed.

Examples

```
data(daBedRaw)
class(daBedRaw); dim(daBedRaw); colnames(daBedRaw)
```

---

daEsa *Daily returns of 14 public firms from 1990 to 2004*

Description

This data set contains daily returns of 14 public firms, three-month treasury bill, and SP 500 Index from 1990 to 2004.

date	Eight-digit numbers for date of 1990-2004; the format is YYMMDD, e.g., 19900102 for Jan 2, 1990
tb3m	Daily returns for three-month treasury bills
sp500	Daily returns for SP 500 Index
bcc	Daily returns for Boise Cascade
bow	Daily returns for Bowater
csk	Daily returns for Chesapeake Corp VA
gp	Daily returns for Georgia-Pacific
ip	Daily returns for International Paper
kmb	Daily returns for Kimberly Clark
lpx	Daily returns for Louisiana Pacific
mwv	Daily returns for MeadWestvaco
pch	Daily returns for Potlatch
pcl	Daily returns for Plum Creek
pop	Daily returns for Pope and Talbot
tin	Daily returns for Temple Inland
wpp	Daily returns for Wausau Mosinee Paper
wy	Daily returns for Weyerhaeuser

Usage

```
data(daEsa)
```

Format

A data frame object with daily returns for firms or indexes from 1994 to 2004. There are 17 columns and 3747 rows. The date is not regular because there is no trading on weekends and holidays. Therefore, the date is represented by a number, not a date.

Details

This is the transformated data set used in the study of Sun and Liao (2011).

Source

The daily returns for SP 500 and individual firms are from the database of the Center for Research in Security Prices (CRSP). The risk-free rate of return is the secondary market rate for the 3-month US Treasury bills from the Federal Reserve Bank.

References

Sun, C., and X. Liao. 2011. Effects of litigation under the Endangered Species Act on forest firm values. Journal of Forest Economics 17(4):388-398.

See Also

evReturn; evRisk.

Examples

```
data(daEsa)
dim(daEsa); colnames(daEsa)
head(daEsa); tail(daEsa)
str(daEsa)

# if dates are stored as a date object in R, then it can be converted into
# numbers as the following example shows.

raw <- as.Date(c('1990-01-02', '1991-11-12')); raw; str(raw)
raw2 <- as.numeric(strftime(raw, format = "%Y%m%d")); raw2; str(raw2)
```

---

daExp *Expenditure Data for a Hausman Test in AIDS Model*

Description

This data set contains seven monthly times series for expenditure from 2001 to 2008.

pinc	Billions of dollars, personal income
dpi	Billions of dollars, disposable personal income
pce	Billions of dollars, personal consumption expenditures
dg	Billions of dollars, Personal consumption expenditures for durable goods
rdpi	Billions of dollars, real disposable personal income
rpce	Billions of dollars, real personal consumption expenditures
rdg	Billions of dollars, real personal consumption expenditures for durable goods

Usage

```
data(daExp)
```

Format

Monthly time series from Janurary 2001 to December 2008 with 96 observations for each of the seven variables.

Details

This is the data set for conducting a Hausman test in a static AIDS model, as detailed in Wan et al. (2010). The test focuses on whether the expenditure variable in a AIDS model is exogenous or not. Each of the seven expenditure data can be used as an instrumental variable in an auxiliary regression.

Source

Federal Reserve Bank of St. Louis. Economic Data - Fred. Internet site: http://stlouisfed.org (Accessed February 25, 2010).

References

Wan, Y., C. Sun, and D.L. Grebner. 2010. Analysis of import demand for wooden beds in the United States. Journal of Agricultural and Applied Economics 42(4):643-658.

Examples

```
data(daExp)
class(daExp); dim(daExp); colnames(daExp)
daExp
```

---

daIns *Liability Insurance Coverage for Hunters and Anglers in Mississippi*

Description

This data set contains a survey result about liability insurance purchase decision by hunters and anglers in Mississippi. There are 1653 observations for 14 variables.

`Y`	Binary dependent variable = 1 if had liability insurance; 0 otherwise
`Injury`	Times of bodily injuries or property damages in the past three years
`HuntYrs`	Years of hunting
`Nonres`	Dummy = 1 if nonresidents; 0 if Mississippi residents
`Lspman`	Dummy = 1 if purchased the license of resident sportsman; 0 otherwise
`Lnong`	Dummy = 1 if purchased the license of nonresident all game; 0 otherwise
`Gender`	Dummy = 1 if male; 0 otherwise
`Age`	Age of the hunter or angler
`Race`	Dummy = 1 if Caucasian; 0 otherwise

Marital	Dummy = 1 if married; 0 otherwise
Edu	Years of education
Inc	Household income in 2004 (1,000 dollars)
TownPop	Population size of the residence town (1,000)
FishYrs	Years of fishing

Usage

```
data(daIns)
```

Format

A cross sectional data with 1653 observations and 14 variables.

Details

The data set is from a telephone survey conducted in 2005 in Mississippi.

Source

Sun, C., S. Pokharel, W.D. Jones, S.C. Grado, and D.L. Grebner. 2007. Extent of recreational incidents and determinants of liability insurance coverage for hunters and anglers in Mississippi. Southern Journal of Applied Forestry 31(3):151-158.

See Also

daInsNam

Examples

```
data(daIns)
class(daIns); dim(daIns)
head(daIns); tail(daIns)

ra <- glm(formula = Y ~ Injury + HuntYrs + Nonres +
                    Lspman + Lnong + Gender + Age +
                    Race + Marital + Edu + Inc + TownPop,
          family = binomial(link="logit"),
          data = daIns, x = TRUE, y= TRUE)
names(ra); summary(ra)

(ins.me <- maBina(w = ra))
(ins.mt <- maTrend(q=ins.me, nam.c="Age", nam.d="Nonres"))
plot(ins.mt)
```

daInsNam *Liability Insurance Coverage for Hunters and Anglers in Mississippi: Variable Definitions*

Description

This data set contains variable defintions for the a survey result about liability insurance purchase decision by hunters and anglers in Mississippi, as documented in daIns. It contains 14 observations and 2 columns.

Variable	14 variable abbrevations
Definition	Detailed definitions for the 14 variables

Usage

```
data(daInsNam)
```

Format

A data frame with 2 columns and 14 rows.

Details

The data set contains the definitions of 14 variables collected from a telephone survey as detailed in daIns

Source

Sun, C., S. Pokharel, W.D. Jones, S.C. Grado, and D.L. Grebner. 2007. Extent of recreational incidents and determinants of liability insurance coverage for hunters and anglers in Mississippi. Southern Journal of Applied Forestry 31(3):151-158.

See Also

daIns

Examples

```
data(daInsNam)
str(daInsNam); dim(daInsNam); daInsNam
```

daLaw *Data for statutory reforms and retention of prescribed fire liability laws on forest land by state*

Description

This data set contains a cross-sectional data set for current adoption of statutory laws with regard to prescribed fire liability on forest landowners. It has 50 observations and 16 variables.

SHORT	Two-letter abbreviations of 50 state names
STATE	Full state names
Y	Categorical dependent variable (Y = 0, 1, 2, or 3)
FYNFS	National Forests area in a state (million acres)
FYIND	Industrial forest land area in a state (million acres)
FYNIP	Nonindustrial private forest land area in a state (million acres)
AGEN	Permanent forestry program personnel in a state
POPRUR	Rural population in a state (million)
EDU	Population 25 years and older with advanced degrees in a state (million)
INC	Per capita income in a state (thousand dollars)
DAY	The maximum length of legislative sessions in calendar days in a state
BIANN	A dummy variable equal to one for states with annual legislative sessions, zero with biannual (or less)
SEAT	Total number of legislative seats (Senate plus House) in the legislative body in a state
BICAM	Level of bicameralism in a state, defined as the size of the Senate divided by the size of the House
COMIT	Total number of standing committees in a state
RATIO	Total number of standing committees in a state divided by the number of legislators

Usage

```
data(daLaw)
```

Format

A data frame object with 50 rows and 16 variables.

Details

This is the final data set used in the study of Sun (2006).

Source

See Table 2 in Sun (2006) for detail of data sources.

References

Sun, C. 2006. State statutory reforms and retention of prescribed fire liability laws on US forest land. Forest Policy and Economics 9(4):392-402.

Examples

```
data(daLaw)
str(daLaw); head(daLaw); names(daLaw)
```

---

daPe *Program Effectiveness of a New Method of Teaching Economics*

Description

This data set contains the evaluation results of a new program of teaching in economics. There are 32 observations for 4 variables.

grade	a binary variable indicating grade increase (1) and decrease (0) after participation.
gpa	a continous variable measuring studens' grade point average.
tuce	a continous variable measuring students' scores on an economics test.
psi	a binary variable indicating whether a student participates the program or not.

Usage

```
data(daPe)
```

Format

A data frame of cross sectional data with 32 observations and 4 variables.

Details

Evaluation results on 32 students of the impact of a new teaching methods.

Source

Spector, L.C., and M. Mazzeo. 1980. Probit analysis and economic education. Journal of Economic Education 11(2):37-44.

Examples

```
data(daPe)
dim(daPe)
summary(daPe)
daPe
```

daRoll *Voting records for the Healthy Forests Restoration Act in 2003 and the associated characteristics of congressmen*

Description

This data set contains the voting records for the Healthy Forests Restoration Act in 2003, as used in Sun (2006). The characteristics of individual congressmen are also included. There are 537 observations and 22 variables.

state	state name for a congressman
district	district for a congressman; 0 for senators
name	Family name of a congressman
voteMay	voting record in May 2003 in the House; 1 if yes, 0 if no, and NA if not voted
voteNov	voting record in Nov 2003 in both the House and Senate
RepParty	Dummy equals one if Republican
East	Regional dummy for 11 northeastern states
West	Regional dummy for 11 western states
South	Regional dummy for 13 southern states
PopDen	Population density - 1000 persons per km2
PopRural	Population density per km2
Edu	Percentage of population over 25 with a Bachelor's degree
Income	Median family income ($1,000)
FYland	Percentage of federal lands in total forestlands 2002
Size	Value of shipments of forest industry 1997 (million dollars)
ContrFY	Contribution from forest firms (1,000 dollars)
ContrEN	Contribution from environmental groups (1,000 dollars)
Sex	Dummy equals one if male
Lawyer	Dummy equals one if lawyer
Member	Dummy equals one if a committee member for the HFRA
Year	Number of years in the position
Chamber	Dummy equals one if House and zero if Senate

Usage

```
data(daRoll)
```

Format

A data frame object with 537 rows and 22 variables. This is a cross-sectional dataset that are generating from merging several raw datasets.

Details

This is the combinded final data set used in the study of Sun (2006).

Source

See Table 1 in Sun (2006) for detail.

References

Sun, C. 2006. A roll call analysis of the Healthy Forests Restoration Act and constituent interests in fire policy. Forest Policy and Economics 9(2):126-138.

See Also

glm; maBina.

Examples

```
# generate four datasets used in Sun (2006)
data(daRoll)
xn <- c('RepParty', 'East', 'West', 'South', 'PopDen',
  'PopRural', 'Edu', 'Income', 'FYland', 'Size',
  'ContrFY', 'ContrEN', 'Sex', 'Lawyer', 'Member', 'Year', 'Chamber')

f1 <- daRoll[!is.na(daRoll$voteMay), c('voteMay', xn)]
f2 <- daRoll[!is.na(daRoll$voteNov) & daRoll$Chamber == 1, c('voteNov', xn)]
f3 <- daRoll[!is.na(daRoll$voteNov), c('voteNov', xn)]
f4 <- daRoll[!is.na(daRoll$voteNov) & daRoll$RepParty == 0, c('voteNov', xn)]
rownames(f1) <- 1:nrow(f1); rownames(f2) <- 1:nrow(f2)
rownames(f3) <- 1:nrow(f3); rownames(f4) <- 1:nrow(f4)
colnames(f1)[1] <- colnames(f2)[1] <- 'Vote'
colnames(f3)[1] <- colnames(f4)[1] <- 'Vote'
dim(f1); dim(f2); dim(f3); dim(f4)
tail(f3)
```

---

download.lib *Downloading source and PDF version of R packages*

Description

This function can download three documents for each package: zip version, source version (tar.gz), and PDF manual.

Usage

```
download.lib(pkgs, destdir = getwd(), mode = "wb",
  pdf.url = "http://cran.r-project.org/web/packages/",
  f.zip = TRUE, f.pdf = TRUE)
```

Arguments

pkgs	A character vector for the names of one or multiple packages
destdir	The directory where documents are saved (e.g., C:/myFile; the default directory is the current working directory.
mode	The argument for download.file; the default is 'wb' for PDF version.
pdf.url	The url for PDF documents online.
f.zip	A logical value indicating whether a zip version is downloaded; by default, a zip version is downloaded by download.packages
f.pdf	A logical value indicating whether a PDF mannual for a package should be downloaded from the internet.

Details

This function is mainly used to download the source version of one or multiple packages. A zip version and a PDF manual can also be downloaded at the same time.

Value

Return the packge names.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

See Also

download.packages; download.file.

Examples

```
## Not run:
  download.lib(pkgs = 'erer', destdir = 'c:/aErer/Rcode',
    f.zip = FALSE, f.pdf = TRUE)

## End(Not run)
```

---

evReturn *Estimating Abnormal Return from Event Analysis*

Description

Conduct an event analysis and estimate abnormal returns over time and across firms.

Usage

```
evReturn(y, firm, event.date, y.date = "date",
  index = "sp500", event.win = 3, est.win = 250, digits = 4, ...)
```

Arguments

y	a data frame object with one column for date, return series by firms, a return series for a stock market index, and a return series for a risk free asset.
firm	a character vector of firm names; this is the name of the return series in y.
event.date	event dates for each firm as specified in firm; this should be a numerical vector and can match the values in y$y.date; if event dates are the same for all the firms, this can be specificed as a single number.
y.date	a character value for the column name of date in y.
index	a character value for the column name of index in y.
event.win	the one-side width of event window in days; the default value of 3 corresponds to a 7-day window (i.e., 3 + 1 + 3).
est.win	the width of estimation window in days.
digits	number of digits used to format outputs.
...	additional arguments to be passed.

Details

This is the core function for event analysis. It estimates a market model by firm and then calculate abnormal returns by firm and over time. The time series of stock returns have irregular time frequency because of varying trading days. Thus, the time dimension is explicitly specified as a y.date column in the data of y.

Value

Return a list object of class "evReturn" with the following components:

y	a data frame of raw return data.
y.date	a character value for the column name of date in y..
firm	a character vector of firm names.
N	the number of firms.
index	a character value for the column name of index in y.
event.date	event dates for each firm as specified in firm.
event.win	the one-side width of event window in days.
event.width	total number of days in an event window.
est.win	the width of estimation window in days..
daEst	data used to estimate the market model for the last firm as specified in codefirm.
daEve	data over the event window for the last firm.
ra	fitted market model for the last firm.

digits	number of digits used to format outputs.
reg	regression coefficients by firm.
abr	abnormal returns by day over the event window and by firm.
abc	average abnormal returns across firms.
call	a record of the system call; this allows update.default to be used.

Methods

Two methods are defined as follows:

print: print three selected outputs.

plot: plot average cumulative abnormal returns from event analysis versus days in event window.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Mei, B., and C. Sun. 2008. Event analysis of the impact of mergers and acquisitions on the financial performance of the U.S. forest products industry. Forest Policy and Economics 10(5):286-294.

Sun, C., and X. Liao. 2011. Effects of litigation under the Endangered Species Act on forest firm values. Journal of Forest Economics 17(4):388-398.

See Also

evRisk

Examples

```
data(daEsa)

# event analysis for one firm and one event window
hh <- evReturn(y = daEsa, firm = "wpp",
   y.date = "date", index = "sp500", est.win = 250, digits = 3,
   event.date = 19990505, event.win = 5)
hh; plot(hh)

# event analysis for many firms and one event window
hh2 <- update(hh, firm = c("tin", "wy", "pcl", "pch")); hh2

# event analysis for many firms and many event windows: need a for loop
```

evRisk *Risk Evaluation for Event Analysis*

Description

Conduct a risk analysis by firm and evaluate the change of risk before and after an event. The model used is the Captial Asset Pricing Model.

Usage

```
evRisk(x, m = 50, r.free = "tbill", ...)
```

Arguments

x	a object from evReturn.
m	the number of days before and after the event date for estimating CAPM.
r.free	the column name of risk free asset in y.
...	additional arguments to be passed.

Details

This fits CAPM for each firm and reports the statistics for alpha, beta, and gamma. The statistics of gamma reveal the change of risk before and after the event.

Value

Return a list object of class "evReturn" with the following components:

x	a object from evReturn.
daEst	data used to estimate CAPM for the last firm as specified in codefirm.
rb	fitted CAPM for the last firm.
reg	regression coefficients by firm.

Methods

One method is defined as follows:

print: print selected outputs.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Mei, B., and C. Sun. 2008. Event analysis of the impact of mergers and acquisitions on the financial performance of the U.S. forest products industry. Forest Policy and Economics 10(5):286-294.

See Also

evReturn

Examples

```
data(daEsa)

hh <- evReturn(y = daEsa, firm = "wpp",
   y.date = "date", index = "sp500", est.win = 250, digits = 3,
   event.date = 19990505, event.win = 5)
hh2 <- update(hh, firm = c("tin", "wy", "pcl", "pch"))

kk <- evRisk(x = hh2, m = 100, r.free="tb3m")
kk
```

---

head *Return the first or last part of time series data*

Description

Return the first of last parts of an object of time series data.

Usage

```
  ## S3 method for class 'ts'
head(x, n = 5, ...)
  ## S3 method for class 'ts'
tail(x, n = 5, ...)
```

Arguments

x	input time seires data.
n	a single integer for the length or row of returned data
...	additional arguments to be passed.

Details

The data can be an univariate or multivariate time series data.

Value

An object like x but generally smaller.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

Examples

```
h1 <- ts(data=cbind(1:24), start=c(2001, 1), frequency=12)
h2 <- ts(data=cbind(1:24, 25:48), start=c(2001, 1), frequency=12)
h3 <- ts(data=cbind(1:4, 5:8, 9:12), start=c(2001, 1), frequency=4)
colnames(h2) <- c("aa", "bb")
colnames(h3) <- c("cc", "dd", "ee")
h1; h2; h3

h1; head(h1); tail(h1, 28)
h2; head(h2); tail(h2, 50)
h3; head(h3, 2); tail(h3); tail(h3, 8)

data(daBed); head(daBed); tail(daBed)
```

---

listn *Generate a list object with names*

Description

Generate a list object with names.

Usage

```
listn(...)
```

Arguments

...	individual objects to be included in a list.

Details

This generates a list object by addressing the naming problem. For `list`, if no names are given, the list generated will have no names. In some situations, the number of individual objects is large and the names of these individual objects can be used as the names. This function addresses this need. If names are given, they will be used. If not, the names of individual objects will be used.

Value

Return a list object with names.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

Examples

```
y1 <- 1:10
y2 <- c("a", "b")
listn(y1, y2)
listn(y1 = y1, y2)
listn(y1 = y1, y2.rev = y2, y2, 5:8, c("d", "f"))

identical(listn(y1, y2), listn(y1 = y1, y2))        # TRUE
identical(listn(y1, y2), list(y1 = y1, y2))        # FALSE
identical(listn(y1, y2), list(y1 = y1, y2=y2))     # TRUE
```

---

lss *List Objects with Their Sizes*

Description

Show the name and memory size of objects in an R session.

Usage

```
lss(n = 5, pos = 1, decreasing = TRUE, order.by=c("Size", "Type"))
```

Arguments

n	number of objects to show.
pos	specifying the environment; see ls.
decreasing	sorting order.
order.by	sorting variable.

Details

This function shows the names and sizes of objects in an R session. This is useful for managing avaiable memory in an R Session.

Value

Return a dataframe object with the following columns: name, type, size, prettysize, rows, and columns.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

See Also

ls.

Examples

```
lss()
ls()
```

---

maBina *Marginal Effect for Binary Probit and Logit Model*

Description

This function calculates marginal effects for a binary probit or logit model and their standard errors.

Usage

```
maBina(w, x.mean = TRUE, rev.dum = TRUE, digits = 3,
  subset.name = NULL, subset.value)
```

Arguments

w	a binary probit or logit model object estimated from glm().
x.mean	a logical value (default of TRUE) of whether to calculate marginal effects at the means of independent variables. If FALSE, marginal effects are calculated for each observation and then averaged.
rev.dum	a logical value (default of TRUE) of whether to revise the estimates and standard erros for binary independant variables. If FALSE, derivatives are taken on binary independant variables as continuous variables.
digits	number of digits for output.
subset.name	a variable name for subsetting the data (e.g., a dummy variable).
subset.value	if subset.name is not NULL, this value is used to subset the data set for the variable specified in subset.name.

Details

Marginal effects from a binary probit or logit model is calculated. The two choices are the method of averaging effects and revising estimates for dummy variables. Marginal effects can be calculated at the mean of the independent variables (i.e., x.mean = TRUE), or as the average of individual marginal effects at each observation (i.e., x.mean = FALSE). rev.dum = TRUE allows marginal effects for dummy variables are calculated differently, instead of treating them as continuous variables.

In addition, the data set used for calculating the marginal effect can be the whole data set, or a subsect of the whole data set. In subsetting the data, a variable name and its value should be supplied. This is generally applied on a dummy variable, as shown in the example.

Value

Return a list object of class "maBina" with the following components:

`link`	link function used in the binary model;
`f.xb`	scale factor of marginal effects, calculated as the density function evaluated at the means of the variables when `x.mean = TRUE` is specified or the average density value for all individual observations when `x.mean = FALSE` is specified;
`w`	a binary probit or logit model object estimated from `glm()`;
`x`	the data set used in computing marginal effects.
`out`	a data frame object of marginal effects, t-value, and p-value.

Methods

One method is defined as follows:

`print:` print the key output of marginal effects.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Greene, W.H. 2003. Econometric Analysis (5th ed.). Prentice Hall, New York. 1026 P.

See Also

`maTrend`; `plot.maTrend`.

Examples

```
data(daPe)
ma <- glm(grade ~ gpa + tuce + psi, x = TRUE,
    data = daPe, family = binomial(link = "probit"))

ea <- maBina(w = ma, x.mean = TRUE, rev.dum = TRUE)
eb <- maBina(w = ma, x.mean = TRUE, rev.dum = TRUE,
  subset.name = "psi", subset.value = 0)
ec <- maBina(w = ma, x.mean = TRUE, rev.dum = TRUE,
  subset.name = "psi", subset.value = 1)
ea; eb; ec
eb$x; ec$x
```

maTrend *Trend of probability values in a binary choice model*

Description

This function computes the change of probability for a continuous variable based on a binary choice model (either probit or logit), and furthermore, stratifies the probability through a binary independant variable.

Usage

```
maTrend(q, n = 300, nam.c, nam.d, simu.c = TRUE)
```

Arguments

q	a object of class of "maBina" estimated from maBina().
n	number of points for calculating probability; the large the number, the smoother the curve.
nam.c	a name of a continuous indepedent variable; this must be given for the function to work.
nam.d	an optional name of a binary independent variable; this is used to stratify the probability.
simu.c	Whether simulation data for the continuous variable of nam.c should be used (default is TRUE); if not, the original data for this variable is used.

Details

For a continous variable, its probability values can be computed on the basis of a binary probit or logit model. The trend can be stratified by a binary independent variable. In addition, the standard errors of each probability series are also computed using delta method.

Value

Return a list object of class "maTrend" with the following components:

q	a list object of class "maBina"
nam.c	the name of a continous variable
mm	matrix of independant variables for all
trend	if nam.d is not specified, this is a data frame of the continous variable, its probability values, standard errors, t values, and p values; if nam.d is specified, the data frame contains the continuous variable, the probability values for all, and two additional probability series stratified by the dummy variable
nam.d	if nam.d is specified, the name of a binary variable .
m1	if nam.d is specified, the matrix of mm with the column value for nam.d replaced by 1

m0	if nam.d is specified, the matrix of mm with the column value for nam.d replaced by 0
trend1	if nam.d is specified, this is a data frame reporting the probability value, standard error, t value, and p value associated with the dummy variable being 1
trend0	if nam.d is specified, this is a data frame reporting the probability value, standard error, t value, and p value associated with the dummy variable being 0

Methods

Two methods are defined as follows:

print: print the probability output.

plot: Plot the probability values for a continuous variable. If a strata is specified through nam.d in maTrend(), then the stratified values also are shown.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Greene, W.H. 2003. Econometric Analysis (5th ed.). Prentice Hall, New York. 1026 P.

See Also

maBina; print.maTrend; plot.maTrend.

Examples

```
data(daPe)
ma <- glm(grade ~ gpa + tuce + psi, x = TRUE,
    data = daPe, family = binomial(link = "probit"))
summary(ma)

(ea <- maBina(w = ma, x.mean = TRUE, rev.dum = TRUE))
(ta <- maTrend(q = ea, nam.c = "gpa", simu.c = FALSE))
(tb <- maTrend(q = ea, nam.c = "gpa", nam.d= "psi", simu.c = TRUE, n=100))
plot(ta)
plot(tb)
```

---

ocME *Marginal Effect for Ordered Choice Model*

Description

This function calculates marginal effects for an ordered chioce model and their standard errors. Either an ordered probit or logit model can be accommodated.

Usage

```
ocME(w, rev.dum = TRUE, digits = 3)
```

Arguments

w	an ordered probit or logit model object estimated by polr from the MASS library.
rev.dum	a logical value (default of TRUE) of whether to revise the estimates and standard erros for binary independant variables. If FALSE, derivatives are taken on binary independant variables as continuous variables.
digits	number of digits for output.

Details

Marginal effects from an ordered probit or logit model is calculated. Marginal effects are calculated at the mean of the independent variables. rev.dum = TRUE allows marginal effects for dummy variables are calculated differently, instead of treating them as continuous variables. The standard errors are computed by delta method. The software of LIMDEP is used to compare and benchmark the results.

Value

Return a list object of class "ocME" with the following components:

w	input of an ordered choice model
out	a list object of marginal effects, standard errors, t-values, and p-values by factor level.

Methods

One method is defined as follows:

print: print the key output of marginal effects.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Greene, W.H. 2003. Econometric Analysis (5th ed.). Prentice Hall, New York. 1026 P.

See Also

ocProb

Examples

```
# Loading data from the MASS library
library(MASS)
data(housing)
str(housing); head(housing)

# Fit an ordered choice model with polr from the MASS library
# This is the original specification used in MASS.
fm <- Sat ~ Infl + Type + Cont
ra <- polr(fm, data = housing, weights = Freq, Hess = TRUE, method = "probit")
rb <- polr(fm, data = housing, weights = Freq, Hess = TRUE, method = "logistic")
summary(ra); summary(rb)

# Compute the marginal effect
mea <- ocME(w = ra); mea
meb <- ocME(w = rb); meb
meb$out
```

---

ocProb *Probability trend for a continuous variable in an ordered choice model*

Description

This function computes the probability values for a continuous variable, based on an ordered choice model. Either an ordered probit or logit model can be used.

Usage

```
ocProb(w, nam.c, n = 100, digits = 3)
```

Arguments

w	a object of class of "polr" estimated from `polr` from the MASS library.
n	number of points for calculating probability; the large the number, the smoother the curve.
nam.c	a name of a continuous indepedent variable; this must be given for the function to work.
digits	number of digitis for output formatting.

Details

This function computes the probability values associated with a continous variable in an ordered probit or logit model. The standard errors of each probability value by factor level is computed using delta method. The software of LIMDEP is used to compare and benchmark the results.

Value

Return a list object of class "ocProb" with the following components:

w, nam.c, method=w$method, mean.x=colMeans(x), out, lev)

`w`	an object of class "polr"
`nam.c`	the name of a continous variable
`method`	type of the ordered choice model of `w`, either "probit" or "logistic"
`mean.x`	mean values of the independent variables used in `w`
`out`	This is a list object with the estimated probability values, standard errors, t values, and p values for each of the factor level in `lev`.
`lev`	a character string representing the factor level used in `w`

Methods

Two methods are defined as follows:

`print`**:** print the probability output.

`plot`**:** Plot the probability values for a continuous variable.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Greene, W.H. 2003. Econometric Analysis (5th ed.). Prentice Hall, New York. 1026 P.

See Also

ocME

Examples

```
# Loading data from the MASS library
library(MASS)
data(housing)
str(housing); head(housing)

# Fit an ordered choice model with polr from the MASS library
# Note this is a fake specification
# The variable of "Freq" is included to have a
#   continuous variable for demonstration.
fm2 <- Sat ~ Infl + Type + Cont + Freq
rc <- polr(fm2, data = housing, Hess = TRUE, method = "probit")
rd <- polr(fm2, data = housing, Hess = TRUE, method = "logistic")
summary(rc); summary(rd)

# Compute predicated probabilities with one continous variable
(fa <- ocProb(w = rc, nam.c = 'Freq', n = 300))
```

```
(fb <- ocProb(w = rd, nam.c = 'Freq', n = 300))
plot(fa)
plot(fb)
```

`summary.aiFit` *Summary of Results from Static or Dynamic Models*

Description

This summarizes the main results from AIDS models.

Usage

```
## S3 method for class 'aiFit'
summary(object, digits=3, ...)
```

Arguments

`object`	an object of class `aiFit` from the function of `aiStaFit` or `aiDynFit`.
`digits`	number of digits for rounding outputs
`...`	additional arguments to be passed.

Details

This wraps up the coefficents and statistics from aiFit by equation.

Value

A data frame object with coefficients and related statistics by equation.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

See Also

`aiStaFit` and `aiDynFit`.

Examples

```
# see the examples for 'aiDynFit'.
```

`systemfitAR` *Linear Equation System Estimation with Correction on Autocorrelation*

Description

Fits a set of linear structural equations using Ordinary Least Squares (OLS), Weighted Least Squares (WLS), Seemingly Unrelated Regression (SUR), with the option of autocorrelation correlation.

Usage

```
systemfitAR(formula, method = "OLS", inst = NULL, data = list(),
  restrict.matrix = NULL, restrict.rhs = NULL, restrict.regMat = NULL,
  pooled = FALSE, control = systemfit.control( ... ),
  AR1 = FALSE, rho.sel = c("all", "mean"), model = c("static", "dynamic"), ...)
```

Arguments

`formula`	an object of class `formula` (for single-equation models) or (typically) a list of objects of class `formula` (for multiple-equation models).
`method`	the estimation method, one of "OLS", "WLS", "SUR"; iterated estimation methods can be specified by setting control parameter `maxiter` larger than 1 (e.g. 500).
`inst`	one-sided model formula specifying instrumental variables or a list of one-sided model formulas if different instruments should be used for the different equations (only needed for 2SLS, W2SLS, and 3SLS estimations).
`data`	an optional data framecontaining the variables in the model.
`restrict.matrix`	an optional j x k matrix to impose linear restrictions on the coefficients by `restrict.matrix` * b = `restrict.rhs` (j = number of restrictions, k = number of all coefficients, b = vector of all coefficients)
`restrict.rhs`	an optional vector with j elements to impose linear restrictions (see `restrict.matrix`); default is a vector that contains j zeros.
`restrict.regMat`	an optional matrix to impose restrictions on the coefficients by post-multiplying the regressor matrix with this matrix (see details).
`control`	list of control parameters. The default is constructed by the function `systemfit.control`. See the documentation of `systemfit.control` for details.
`pooled`	logical, restrict coefficients to be equal in all equations (only for panel-like data).
`AR1`	whether first-order autocorrelation is corrected
`rho.sel`	how rho is computed; `rho.sel = "all"` means that the system is estimated as a single equation and the residuals are used to compute rho. If "mean", each equation in the system is estimated separately and the average of rhos from all the equations are used.

model	Static model has interceipt, while dynamic model has no intercept; see translog cost function and the package for detail.
...	arguments passed to systemfit.control.

Details

This is a wrapper of systemfit with an addition of autocorrelation correction. It is mainly used for SUR model with autocorrelation. The main reference sources are Greene (2003), LIMDEP 9.0 manual, Judge et al. (1985), and Berndt and Savin (1975).

Value

systemfit returns a list of the class systemfit. This list contains one special object: "eq". It is a list and contains one object for each estimated equation. These objects are of the class systemfit.equation and contain the results that belong only to the regarding equation. In addition, there are four new items in the output:

The objects of the class systemfit and systemfit.equation have the following components (the elements of the latter are marked with an asterisk (*)):

rho	autocorrelation coefficient
rho_ste	standard error of rho; if rho.sel = "mean", then it is a vector of the standar errors for individual equations.
data	data used for systemfit; this is data adjusted for autocorrelation if AR1 = TRUE; otherwise, it is just the raw data.
formula	forumula used for systemfit. This can be adjusted for autocorrelation; costant is adjusted as (1 - rho).

Author(s)

Changyou Sun (<cs258@msstate.edu>)

References

Greene, W. H. (2003) *Econometric Analysis, Fifth Edition*, Prentice Hall.

Judge, George G.; W. E. Griffiths; R. Carter Hill; Helmut Luetkepohl and Tsoung-Chao Lee (1985) *The Theory and Practice of Econometrics, Second Edition*, Wiley.

LIMDEP 9.0 software manual.

Berndt, E.R., and N.E. Savin. 1975. Estimation and hypothesis testing in singular equation systems with autoregressive disturbances. Econometrica 43(5/6):937-957.

See Also

lm; aiStaFit; systemfit

Examples

```
# Check Berndt and Savin (1975) dataset

# Check Kemenda data
```

`ur.df2` *Augmented-Dickey-Fuller Unit Root Test revised*

Description

Augmented-Dickey-Fuller Unit Root Test revised

Usage

```
ur.df2(y, type = c("none", "drift", "trend"), lags = 1,
  selectlags = c("Fixed", "AIC", "BIC"), digit = 2)
```

Arguments

`y`	Vector to be tested for a unit root.
`type`	Test type, either "none", "drift" or "trend".
`lags`	Number of lags for endogenous variable to be included.
`selectlags`	Lag selection can be achieved according to the Akaike "AIC" or the Bayes "BIC" information criteria. The maximum number of lags considered is set by lags. The default is to use a "fixed" lag length set by lags.
`digit`	The digit choice.

Details

This is a modification of `ur.df` in the library of `urca`. The function was written in S4, and it is changed into S3. The lag selected by AIC or BIC is reported explicitly through `lag.used` in the output list. In addition, the values of AIC and BIC statistics are reported.

Value

Return an object of class `ur.df2`: the new outputs are `lag.used`, `aic`, and `bic`.

`y`	input of y
`model`	input of model
`cval`	critical values
`lags`	input of lags
`lag.used`	acutal lags used
`teststat`	test statistics
`res`	resiuals of the test regression

aic	aic values
bic	bic values
test.name	test name

Methods

Two methods are defined as follows:

print: print test statistics and critical values.

plot: plot outputs.

Author(s)

Changyou Sun (<cs258@msstate.edu>)

See Also

ur.df in urca library.

Examples

```
# see the code for the study: Japan and China wood product imports
```

---

write.list *Output and Write a List Object*

Description

Print or write its required argument z to a file

Usage

```
write.list(z, file, t.name = NULL, row.names = FALSE, ...)
```

Arguments

z	A list object to be written. Each item in the list is perferably a data frame. If not, it is converted into a data frame. All the contents are coerced into characters to avoid loss of information (e.g., a loss of zero in 5.130.
file	a character string naming a file.
t.name	table names. This can be given explicitly, or given by the list name, or by default, named as "table 1" for the first item in z.
row.names	whether the row names in each table should be written (default is FALSE). If TRUE, a new column of the row names is added to each table.
...	Other arguments that can be passed to write.table

Details

This function is a wrap-up of `write.table`. It is convenient to write a set of tables to C drive.

See Also

`write.table`.

Examples

```
h1 <- ts(data=cbind(1:24), start=c(2001, 1), frequency=12)
h2 <- ts(data=cbind(1:24, 25:48), start=c(2001, 1), frequency=12)
h3 <- ts(data=cbind(1:4, 5:8, 9:12), start=c(2001, 1), frequency=4)
colnames(h2) <- c("aa", "bb")
colnames(h3) <- c("cc", "dd", "ee")
h1; h2; h3

test <- list(t1 = h1, t2 = h2, t3 = h3)

## Not run:
  # test.csv can be saved at a specific working directory
  getwd(); setwd("c:/aERER"); getwd()
  write.list(z = test, file = "test.csv")

## End(Not run)
```

Index

∗ **datasets**
daBed, 19
daBedRaw, 20
daEsa, 22
daExp, 23
daIns, 24
daInsNam, 26
daLaw, 27
daPe, 28
daRoll, 29
∗ **manip**
aiData, 3
bsFormu, 13
bsLag, 14
bsStat, 16
bsTab, 17
download.lib, 30
listn, 36
lss, 37
ur.df2, 48
write.list, 49
∗ **methods**
head, 35
summary.aiFit, 45
∗ **models**
systemfitAR, 46
∗ **package**
erer-package, 2
∗ **regression**
aiDiag, 5
aiDynFit, 6
aiElas, 9
aiStaFit, 10
aiStaHau, 12
evReturn, 31
evRisk, 34
maBina, 38
maTrend, 40
ocME, 41
ocProb, 43
systemfitAR, 46

aiData, 3
aiDiag, 5, *8*, *11*
aiDynFit, *6*, 6, *10, 11*, *45*
aiElas, *8*, 9, *11*
aiStaFit, *4*, *6*, *8*, *10*, 10, *13*, *20*, *22*, *45*, *47*
aiStaHau, *11*, 12

bsFormu, 13
bsLag, 14
bsStat, 16
bsTab, 17

daBed, *4*, 19, *22*
daBedRaw, *4*, *20*, 20
daEsa, 22
daExp, 23
daIns, 24, *26*
daInsNam, *25*, 26
daLaw, 27
daPe, 28
daRoll, 29
download.file, *31*
download.lib, 30
download.packages, *31*

erer *(*erer-package*)*, 2
erer-package, 2
evReturn, *23*, 31, *35*
evRisk, *23*, *33*, 34

glm, *30*

head, 35

listn, 36
lm, *47*
ls, *37*
lss, 37

maBina, *30*, 38, *41*
maTrend, *39*, 40

ocME, 41, *44*
ocProb, *42*, 43

plot.evReturn *(*evReturn*)*, 31
plot.maTrend, *39*, *41*
plot.maTrend *(*maTrend*)*, 40
plot.ocProb *(*ocProb*)*, 43
plot.urdf2 *(*ur.df2*)*, 48
print.aidata *(*aiData*)*, 3
print.aiFit, *13*
print.aiFit *(*aiStaFit*)*, 10
print.evReturn *(*evReturn*)*, 31
print.evRisk *(*evRisk*)*, 34
print.maBina *(*maBina*)*, 38
print.maTrend, *41*
print.maTrend *(*maTrend*)*, 40
print.ocME *(*ocME*)*, 41
print.ocProb *(*ocProb*)*, 43
print.urdf2 *(*ur.df2*)*, 48

summary.aiFit, *11*, 45
systemfit, *47*
systemfit.control, *46, 47*
systemfitAR, *8*, *11*, 46

tail.ts *(*head*)*, 35

ur.df, *49*
ur.df2, 48

write.list, 49
write.table, *50*