

# Package: GVARX (via r-universe)

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**Type** Package

**Title** Perform Global Vector Autoregression Estimation and Inference

**Version** 1.4

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**Description** Light procedures for learning Global Vector Autoregression model (GVAR) of Pesaran, Schuermann and Weiner (2004) <[DOI:10.1198/073500104000000019](https://doi.org/10.1198/073500104000000019)> and Dees, di Mauro, Pesaran and Smith (2007) <[DOI:10.1002/jae.932](https://doi.org/10.1002/jae.932)>.

**License** GPL (>= 2)

**LazyData** TRUE

**LazyLoad** yes

**Depends** R (>= 3.5.0),vars,xts

**Imports** lmtest, lubridate, sandwich, strucchange, tsDyn, urca

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averageCORgvar	<i>Comparing average residual correlations.</i>
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---

### Description

Average pairwise cross-section residual correlations.

### Usage

averageCORgvar(out)

### Arguments

out	Estimation results object generated by GVAREst
-----	--

### Details

This function compares the dependency of residuals in VAR and GVAR.

### Value

varRSDcor	A list object of average residual correlations of country-specific VAR
gvarRSDcor	A list object of average residual correlations of country-specific VAR augmented by foreign variables(GVAR)

### Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

### References

Mauro Filippo di and Pesaran H. M. (2013) The GVAR Handbook– Structure and Applications of a Macro Model of the Global Economy for Policy. Oxford University Press.

**Examples**

```

data("PriceVol")
data("tradeweight1")
data("tradeweightx")
p=2
FLag=2
lag.max=15
type="const"
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVARest(data=PriceVol,p,lag.max,type,ic,weight.matrix)

cor2_avg=averageCORgvar(out=mainOUTPUT)
as.matrix((cor2_avg$varRSDcor)[[1]])
as.matrix((cor2_avg$varRSDcor)[[2]])

as.matrix(cor2_avg$gvarRSDcor[[1]])
as.matrix(cor2_avg$gvarRSDcor[[2]])

```

averageCORgvecm

*Comparing average residual correlations of GVECM and VECM.***Description**

Average pairwise cross-section residual correlations of GVECM and VECM.

**Usage**

```
averageCORgvecm(out)
```

**Arguments**

out                    Estimation results object generated by GVECMest

**Details**

This function compares the dependency of residuals in VAR and GVAR.

**Value**

vecmRSDcor            A list object of average residual correlations of country-specific VECM  
gvecmRSDcor           A list object of average residual correlations of country-specific VECM augmented by foreign variables(GVECM)

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

## References

Mauro Filippo di and Pesaran H. M. (2013) The GVAR Handbook– Structure and Applications of a Macro Model of the Global Economy for Policy. Oxford University Press.

## Examples

```
data("PriceVol")
data("tradeweight1")
data("tradeweightx")
p=2
FLag=2
lag.max=15
type="const"
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVECMest(data=PriceVol,p,lag.max,type,ic,weight.matrix)

cor2_avg=averageCORgvecm(out=mainOUTPUT)
as.matrix((cor2_avg$vecmRSDcor)[[1]])
as.matrix((cor2_avg$vecmRSDcor)[[2]])

as.matrix(cor2_avg$gvecmRSDcor[[1]])
as.matrix(cor2_avg$gvecmRSDcor[[2]])
```

---

getCOEF

*Return country-specific standard LS coefficient estimates.*

---

## Description

Extract country-specific standard LS coefficient estimates.

## Usage

```
getCOEF(out, sheet)
```

## Arguments

out	A list object of estimation results generated by GVARest()
sheet	The number of country in out file

## Details

Extract country-specific standard LS coefficient estimates.

## Value

coef	Country-specific coefficient estimates
------	--

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

**Examples**

```
data("PriceVol")
data("tradeweight1")
data("tradeweightx")
p=2
FLag=2
lag.max=15
type="const"
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVARest(data=PriceVol,p,lag.max,type,ic,weight.matrix)
COEF=getCOEF(out=mainOUTPUT,sheet=1)
```

---

getCOEFexo

*All-country LS coefficient estimates.*

---

**Description**

Extract all-country LS coefficient estimates.

**Usage**

```
getCOEFexo(out)
```

**Arguments**

out                    A list object of estimation results generated by GVARest().

**Details**

Extract all-country LS coefficient estimates.

**Value**

coef                    Country-specific coefficient estimates.

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

**Examples**

```

data("PriceVol")
data("tradeweight1")
data("tradeweightx")
p=2
FLag=2
lag.max=15
type="const"
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVARest(data=PriceVol,p,lag.max,type,ic,weight.matrix)
#COEF=getCOEFexo(out=mainOUTPUT)

```

---

getNWCOEF

---

*Extract country-specific LS coefficient estimates with Newy-West robust covariance.*


---

**Description**

Extract country-specific LS coefficient estimates with Newy-West robust covariance.

**Usage**

```
getNWCOEF(out, sheet)
```

**Arguments**

out	A list object of estimation results generated by GVAREst.
sheet	The number of country in out that is to be saved.

**Value**

coef	Country-specific coefficient estimates.
------	---

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

**References**

Newey WK and West KD (1994) Automatic Lag Selection in Covariance Matrix Estimation. Review of Economic Studies,61,631-653.

**Examples**

```
data("PriceVol")
data("tradeweight1")
data("tradeweightx")
p=2
FLag=2
lag.max=15
type="const"
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVAREst(data=PriceVol,p,lag.max,type,ic,weight.matrix)
COEF=getNWCOEF(out=mainOUTPUT,sheet=1)
```

---

getNWCOEFexo	<i>Extract all-country coefficient estimates with Newy-West robust covariance.</i>
--------------	--

---

**Description**

Extract all-country coefficient estimates with Newy-West robust covariance.

**Usage**

```
getNWCOEFexo(out)
```

**Arguments**

out	A list object of estimation results generated by GVAREst.
-----	---

**Value**

coef	Country-specific coefficient estimates.
------	---

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

**References**

Newey WK and West KD (1994) Automatic Lag Selection in Covariance Matrix Estimation. Review of Economic Studies, 61, 631-653.

**Examples**

```

data("PriceVol")
data("tradeweight1")
data("tradeweightx")
p=2
FLag=2
lag.max=15
type="const"
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVAREst(data=PriceVol,p,lag.max,type,ic,weight.matrix)
COEF=getNWCOEFexo(out=mainOUTPUT)

```

---

getWhiteCOEF	<i>Extract country-specific LS coefficient estimates with White robust covariance.</i>
--------------	--

---

**Description**

Extract country-specific LS coefficient estimates with White robust covariance.

**Usage**

```
getWhiteCOEF(out,sheet)
```

**Arguments**

out	A list object of estimation results generated by GVAREst.
sheet	The number of country in out that is to be saved.

**Value**

coef	Country-specific coefficient estimates.
------	---

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

**Examples**

```

data("PriceVol")
data("tradeweight1")
data("tradeweightx")
p=2
FLag=2
lag.max=15
type="const"

```



```
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVAREst(data=PriceVol,p,lag.max,type,ic,weight.matrix)

COEF=getWhiteCOEF(out=mainOUTPUT,sheet=1)
```

---

getWhiteCOEFexo	<i>Extract all-country coefficient estimates with White robust covariance.</i>
-----------------	--

---

### Description

Extract all-country coefficient estimates with Newy-West robust covariance, and save them in a .csv file.

### Usage

```
getWhiteCOEFexo(out)
```

### Arguments

out	A list object of estimation results generated by GVAREst.
-----	---

### Value

coef	Country-specific coefficient estimates.
------	---

### Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

### Examples

```
data("PriceVol")
data("tradeweight1")
data("tradeweightx")
p=2
FLag=2
lag.max=15
type="const"
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVAREst(data=PriceVol,p,lag.max,type,ic,weight.matrix)
COEF=getWhiteCOEFexo(out=mainOUTPUT)
```

GVARest

*Estimate country-specific VAR in a GVAR setting***Description**

Estimate country-specific VAR in a GVAR setting

**Usage**

```
GVARest(data,p,lag.max, type="const", ic,weight.matrix=NULL)
```

**Arguments**

<code>data</code>	Dataframe for bivariate VAR is allowed so far, which is also a strictly balanced panel data format,the first column is cross-section ID,and the second column is Time. For the sake of identification, both columns must be named by, respectively, id and Time. Restriction of bivariate VAR will be relaxed soon.
<code>p</code>	The number of lag for Xt matrix, foreign variables are set by FFlag=p+1. Current version restricts $p \leq 2$ with a view to avoiding too many paramaters in low-frequency data of many variables and many countries. It will be relaxed soon.
<code>lag.max</code>	The maximal number of lag for estimating country-specific VAR
<code>type</code>	Model specificaiton for VAR. As in package vars, we have four selection: "none","const","trend", "both".
<code>ic</code>	Information criteria for optimal lag.As in package vars, we have four selection: "AIC", "HQ", "SC", and "FPE".
<code>weight.matrix</code>	Bilateral trade weight matrix for computing foreign variables. If the computation of foreign variables are weighted by one weighting matrix, weight.matrix must be a "data.frame". If the computation of foreign variables are weighted on a year-to-year basis, then weight.matrix must be a "list, with the same length as the weighting frequency.

**Value**

<code>gvar</code>	Country-specific GVAR output list
<code>White</code>	Coefficient estimates with White robust covariance
<code>NWHAC</code>	Coefficient estimates withNewy-West robust covariance
<code>p</code>	Number of lags for endogeneous variables in VAR
<code>K</code>	Number of lags for Ft variables in VAR
<code>type</code>	Model specificaiton. As in package vars, we have four selection: "none","const","trend", and "both".
<code>datamat</code>	input data=data
<code>lagmatrix</code>	GVAR's Country-secific optimal lag number.
<code>lagmatrix1</code>	VAR's Country-secific optimal lag number.

exoLag	Ft lags
Ft	Foreign variables
NAMES	Names of countries
gvarRSD	Country-specific GVAR residuals
varRSD	VAR residuals
weight	weight.matrix

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

**References**

Mauro Filippo di and Pesaran H. M. (2013) The GVAR Handbook– Structure and Applications of a Macro Model of the Global Economy for Policy. Oxford University Press.

**Examples**

```
data("PriceVol")
data("tradeweight1")
data("tradeweightx")

p=2
lag.max=15
type="const"
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVARest(data=PriceVol,p,lag.max,type,ic,weight.matrix)

mainOUTPUT$lagmatrix # Country-specific GVAR lags
mainOUTPUT$gvar
mainOUTPUT$gvar[[1]]
coef(mainOUTPUT$gvar[[17]])
mainOUTPUT$White[[17]]
mainOUTPUT$NWHAC[[17]][1]
```

---

GVAR\_Ft

---

*Function to generate foreign variables*


---

**Description**

Function to generate foreign variables

**Usage**

```
GVAR_Ft(data, weight.matrix=NULL)
```

**Arguments**

<code>data</code>	Dataframe is a strictly balanced panel data format, the first column is cross-section ID, and the second column is Time. For the sake of identification, both columns must be named by, respectively, <code>id</code> and <code>Time</code> .
<code>weight.matrix</code>	Bilateral trade weight matrix for computing foreign variables. If the computation of foreign variables are weighted by one weighting matrix, <code>weight.matrix</code> must be a "data.frame". If the computation of foreign variables are weighted on a year-to-year basis, then <code>weight.matrix</code> must be a "list", with the same length as the weighting frequency. If <code>NULL</code> , then it computes the foreign variables by average.

**Value**

<code>Ft</code>	Weighted foreign variables as described in GVAR
-----------------	---

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

**References**

Mauro Filippo di and Pesaran H. M. (2013) The GVAR Handbook– Structure and Applications of a Macro Model of the Global Economy for Policy. Oxford University Press.

**Examples**

```

=== Loading Data ===#
data("PriceVol")
data("tradeweight1")
data("tradeweightx")

#Generate country-specific foreign variables
Ft=GVAR_Ft(data=PriceVol,weight.matrix=tradeweight1)
k=17
head(Ft[[k]])
tail(Ft[[k]])

```

---

GVAR\_GF

---

*Compute the structural coefficients matrices  $G_0$ ,  $G_1$ ,  $G_2$ , and  $F_1$ ,  $F_2$* 


---

**Description**

Compute the structural coefficients matrices  $G_0$ ,  $G_1$ ,  $G_2$ , and  $F_1$ ,  $F_2$

**Usage**

```
GVAR_GF(data,p, type="const",ic="AIC",weight.matrix)
```

**Arguments**

<code>data</code>	Dataframe is a strictly balanced panel data format, the first column is cross-section ID, and the second column is Time. For the sake of identification, both columns must be named by, respectively, <code>id</code> and <code>Time</code> .
<code>p</code>	The number of lag for $X_t$ matrix. The number of lag for foreign variables in country-specific VAR FLag is set to be $p+1$ . Current version restricts $p \leq 2$ for simplicity, which aims at avoiding too many parameters in low-frequency data of many variables and many countries. It will be relaxed soon.
<code>type</code>	Model specification for VAR. As in package <code>vars</code> , we have four selection: "none", "const", "trend", "both".
<code>ic</code>	Information criteria for optimal lag. As in package <code>vars</code> , we have four selection: "AIC", "HQ", "SC", "FPE".
<code>weight.matrix</code>	Bilateral trade weight matrix for computing foreign variables. If the computation of foreign variables are weighted by one weighting matrix, <code>weight.matrix</code> must be a "data.frame". If the computation of foreign variables are weighted on a year-to-year basis, then <code>weight.matrix</code> must be a "list", with the same length as the weighting frequency.

**Details**

This function generates several structural coefficient matrices of Eq.(2.6) in Filippo and Pesaran(2013, P.17), which are required to compute IRF and multistep forecasts. Besides, it also re-calculates the transformed residuals. In this version, we do not include the impulse responses function(IRF), because the IRF can be computed by these matrices and residuals easily. We will not update it until the next version.

**Value**

<code>G0</code>	Matrix $G_0$ of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>G1</code>	Matrix $G_1$ of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>G2</code>	Matrix $G_2$ of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>F1</code>	Matrix $F_1$ of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>F2</code>	Matrix $F_2$ of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>lagmatrix</code>	Country-specific optimal lag number, which must be the same.
<code>RESID</code>	original residuals= $u$ in Filippo and Pesaran (2013, P.17)
<code>newRESID</code>	New residuals= $\epsilon$ in Filippo and Pesaran (2013, P.17)
<code>fitted</code>	In-sample fitted values, or conditional mean
<code>data</code>	data used

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

## References

Mauro Filippo di and Pesaran H. M. (2013) The GVAR Handbook– Structure and Applications of a Macro Model of the Global Economy for Policy. Oxford University Press.

## Examples

```
data("PriceVol")
data("tradeweightx")
data("tradeweight1")
p=2
type="const"
ic="SC"

Result=GVAR_GF(data=PriceVol,p,type,ic, weight.matrix=tradeweight1)
Result$G0
Result$G1
Result$G2
Result$F1
Result$F2
Result$lagmatrix
Result$RESID
Result$newRESID
Result$fitted
Result$data
#May use forecast::accuracy(Result$fitted[,1], Result$data[,1]) for performance.
```

---

GVECM.jo

*Estimate country-specific Johansen test results in a Global VECM setting*

---

## Description

Estimate country-specific Johansen test results in a Global VECM setting

## Usage

```
GVECM.jo(data,p=2,ecdet = "const", type = "eigen",spec = "longrun",
season = NULL,weight.matrix)
```

## Arguments

data	Dataframe is a strictly balanced panel data format,the first column is cross-section ID,and the second column is Time. For the sake of identification, both columns must be named by, respectively, id and Time.
p	The number of lag for Xt matrix. Current version restricts $p \leq 2$ for simplicity, which aims at avoiding too many paramaters in low-frequency data of many variables and many countries. It will be relaxed soon.

ecdet	Character, 'none' for no intercept in cointegration, 'const' for constant term in cointegration and 'trend' for trend variable in cointegration.
type	Model specification for VECM. As in package VECMs, we have four selection: "none", "const", "trend", "both".
spec	Determines the specification of the VECM, see details in package urca.
season	If seasonal dummies should be included, the data frequency must be set accordingly, i.e. '4' for quarterly data.
weight.matrix	Bilateral trade weight matrix for computing foreign VECMiabls. If the computation of foreign VECMiabls are weighted by one weighting matrix, weight.matrix must be a "data.frame". If the computation of foreign VECMiabls are weighted on a year-to-year basis, then weight.matrix must be a "list, with the same length as the weighting frequency.

### Value

JO.test	List object of country-specific Johansen test results
VECMoutputs	List object of country-specific VECM results
RESID	List object of country-specific VECM residuals, obtained by using vars::vec2var

### Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

### References

Mauro Filippo di and Pesaran H. M. (2013) The GVECM Handbook– Structure and Applications of a Macro Model of the Global Economy for Policy. Oxford University Press.

### Examples

```
data("PriceVol")
data("tradeweight1")
data("tradeweightx")

p=2
FLag=2
type="const"
ic="SC"
weight.matrix=tradeweight1
mainOUT.JO=GVECM.jo(data=PriceVol,p=2,weight.matrix=weight.matrix)
mainOUT.JO$JO.test
```

---

GVECMest	<i>Estimate country-specific Engle-Granger VECM in a Global VECM setting</i>
----------	--

---

### Description

Estimate country-specific Engle-Granger VECM in a Global VECM setting

### Usage

```
GVECMest(data,p=2,lag.max=NULL, type="const", ic,weight.matrix=NULL)
```

### Arguments

data	Dataframe is a strictly balanced panel data format,the first column is cross-section ID,and the second column is Time. For the sake of identification, both columns must be named by, respectively, id and Time.
p	The number of lag for Xt matrix. Foreign variables are set by FFlag=p+1. Current version restricts $p \leq 2$ for simplicity, which aims at avoiding too many paramaters in low-frequency data of many variables and many countries. It will be relaxed soon.
lag.max	The maximal number of lag for estimating country-specific VECM
type	Model specifcaiton for VECM. As in package VECMs, we have four selection: "none","const","trend", "both".
ic	Information criteria for optimal lag.As in package VECMs, we have four selection: "AIC", "HQ", "SC", and "FPE".
weight.matrix	Bilateral trade weight matrix for computing foreign VECMiabiles. If the computation of foreign VECMiabiles are weighted by one weighting matrix, weight.matrix must be a "data.frame". If the computation of foreign VECMiabiles are weighted on a year-to-year basis, then weight.matrix must be a "list, with the same length as the weighting frequency.

### Value

gvecm	Country-specific GVECM output list
White	Coefficient estimates with White robust coVECMiance
NWHAC	Coefficient estimates withNewy-West robust coVECMiance
p	Number of lags for endogeneous VECMiabiles in VECM
K	Number of lags for Ft VECMiabiles in VECM
type	Model specifcaiton. As in package VECMs, we have four selection: "none","const","trend", and "both".
datamat	input data=data
lagmatrix	GVECM's Country-secific optimal lag number.



lagmatrix1	VECM's Country-specific optimal lag number.
exoLag	Ft lags
Ft	Foreign VECMiabiles
NAMES	Names of countries
gvecmRSD	Country-specific Global VECM residuals
vecmRSD	VECM residuals

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

**References**

Mauro Filippo di and Pesaran H. M. (2013) The GVECM Handbook– Structure and Applications of a Macro Model of the Global Economy for Policy. Oxford University Press.

**Examples**

```
data("PriceVol")
data("tradeweight1")
data("tradeweightx")

p=2
FLag=2
lag.max=15
type="const"
ic="SC"
weight.matrix=tradeweightx
mainOUTPUT = GVECMest(data=PriceVol,p,lag.max,type,ic,weight.matrix)

mainOUTPUT$lagmatrix # Country-specific GVECM lags
mainOUTPUT$gvecm
mainOUTPUT$gvecm[[1]]
coef(mainOUTPUT$gvecm[[17]])
mainOUTPUT$White[[17]]
mainOUTPUT$NWHAC[[17]][1]
```

---

GVECM\_GF

---

*Compute the structural coefficients matrices G0, G1, G2, and F1, F2*


---

**Description**

Compute the structural coefficients matrices G0, G1, G2, and F1, F2

**Usage**

```
GVECM_GF(data,p,type="const",ic="AIC",weight.matrix)
```

**Arguments**

<code>data</code>	Dataframe is a strictly balanced panel data format,the first column is cross-section ID,and the second column is Time. For the sake of identification, both columns must be named by, respectively, id and Time.
<code>p</code>	The number of lag for Xt matrix. The number of lag for foreign variables in country-specific VAR F Lag is set to be p+1.Current version restricts $p \leq 2$ for simplicity, which aims at avoiding too many paramaters in low-frequency data of many variables and many countries. It will be relaxed soon.
<code>type</code>	Model specificaiton for VAR. As in package vars, we have four selection: "none","const","trend", "both".
<code>ic</code>	Information criteria for optimal lag.As in package vars, we have four selection: "AIC", "HQ", "SC", "FPE".
<code>weight.matrix</code>	Bilateral trade weight matrix for computing foreign variables. If the computation of foreign variables are weighted by one weighting matrix, weight.matrix must be a "data.frame". If the computation of foreign variables are weighted on a year-to-year basis, then weight.matrix must be a "list", with the same length as the weighting frequency.

**Details**

This function generates several structural coefficient matrices of Eq.(2.6) in Filippo and Pesaran(2013, P.17), which are required to compute IRF and multistep forecasts. Besides, it also re-calculates the transformed residuals. In this version, we do not include the impulse responses function(IRF), because the IRF can be computed by these matrices and residuals easily. We will not update it until the next version.

**Value**

<code>G0</code>	Matrix G0 of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>G1</code>	Matrix G1 of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>G2</code>	Matrix G2 of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>F1</code>	Matrix F1 of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>F2</code>	Matrix F2 of Eq.(2.6) in Filippo and Pesaran(2013, P.17)
<code>lagmatrix</code>	Country-secific optimal lag number.
<code>newRESID</code>	New residuals=epsilon in Filippo and Pesaran (2013, P.17)
<code>fitted</code>	In-sample fitted values, or conditional mean
<code>data</code>	data used

**Author(s)**

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

## References

Mauro Filippo di and Pesaran H. M. (2013) The GVAR Handbook– Structure and Applications of a Macro Model of the Global Economy for Policy. Oxford University Press.

## Examples

```
data("PriceVol")
data("tradeweightx")
data("tradeweight1")
p=2
type="const"
ic="SC"

Result.vecm=GVECM_GF(data=PriceVol,p,type,ic, weight.matrix=tradeweight1)
Result.vecm$G0
Result.vecm$G1
Result.vecm$F1
Result.vecm$G2
Result.vecm$F2
Result.vecm$lagmatrix
Result.vecm$newRESID
Result.vecm$fitted
Result.vecm$data
```

---

PriceVol

*Dataset price-volumn of 17 mareket indices*

---

## Description

A nine-year balanced panel price-volumn data of 17 mareket indices, 2006/8/30-2014/11/19

## Usage

```
data("PriceVol")
```

## Format

A data frame with 0 observations on the following 2 variables.

ID Names of country, cross-section ID  
 Time Time index  
 Ret Daily returns computed by close-to-close  
 Vol Daily transaction volumn, by log

## Source

Yahoo finance

**Examples**

```
data(PriceVol)
```

---

```
tradeweight1
```

*A single year cross-section bilateral trade weight matrix, 2014.*

---

**Description**

A single year cross-section bilateral trade weight matrix, 2014

**Usage**

```
data("tradeweight1")
```

**Format**

A matrix of 17 by 17 bilateral trade weight matrix,2014

Australia Bilateral trade weight matrix of Australia, 2014

Austria Bilateral trade weight matrix of Austria, 2014

Belgium Bilateral trade weight matrix of Belgium, 2014

Brazil Bilateral trade weight matrix of Brazil, 2014

France Bilateral trade weight matrix of France, 2014

UK Bilateral trade weight matrix of UK, 2014

US Bilateral trade weight matrix of US, 2014

Canada Bilateral trade weight matrix of Canada, 2014

HongKong Bilateral trade weight matrix of Hong Kong, 2014

Indonesia Bilateral trade weight matrix of Indonesia, 2014

Malaysia Bilateral trade weight matrix of Malaysia, 2014

Korea Bilateral trade weight matrix of Korea, 2014

Mexico Bilateral trade weight matrix of Mexico, 2014

Japan Bilateral trade weight matrix of Japan, 2014

Swiss Bilateral trade weight matrix of Swiss, 2014

China Bilateral trade weight matrix of China, 2014

Taiwan Bilateral trade weight matrix of Taiwan, 2014

**Details**

This matrix is a 17 by 17 trade weight matrix, the column names are 17 countries. Given column *j*, the row-wise elements are bilateral trade weights of country *j*. Please make sure that the order of countries exactly matches the dataset's ID column.

**Examples**

```
data(tradeweight1)
is.data.frame(tradeweight1)
```

---

tradeweightx	<i>A nine-year bilateral trade weight matrix, 2006-2014</i>
--------------	---

---

**Description**

A nine-year bilateral trade weight matrix, 2006-2014

**Usage**

```
data("tradeweightx")
```

**Format**

A list with 17 by 17 matrix on the following variable.

Australia Bilateral trade weight matrix of Australia, 2014  
Austria Bilateral trade weight matrix of Austria, 2014  
Belgium Bilateral trade weight matrix of Belgium, 2014  
Brazil Bilateral trade weight matrix of Brazil, 2014  
France Bilateral trade weight matrix of France, 2014  
UK Bilateral trade weight matrix of UK, 2014  
US Bilateral trade weight matrix of US, 2014  
Canada Bilateral trade weight matrix of Canada, 2014  
HongKong Bilateral trade weight matrix of Hong Kong, 2014  
Indonesia Bilateral trade weight matrix of Indonesia, 2014  
Malaysia Bilateral trade weight matrix of Malaysia, 2014  
Korea Bilateral trade weight matrix of Korea, 2014  
Mexico Bilateral trade weight matrix of Mexico, 2014  
Japan Bilateral trade weight matrix of Japan, 2014  
Swiss Bilateral trade weight matrix of Swiss, 2014  
China Bilateral trade weight matrix of China, 2014  
Taiwan Bilateral trade weight matrix of Taiwan, 2014

**Details**

This example data is annual trade weight matrix, it is a list with length 9 (2006-2014). Each list is a year specific 17 by 17 trade weight matrix, the column names are 17 countries. Given column  $j$ , the row-wise elements are bilateral trade weights of country  $j$ . Make sure that the length of list must exactly match with the number of years. Because once you use this as tradewieght input matrix, R function will automatically compute foreign variables weighted year-by-year. Please make sure that the order of countries exactly matches the dataset's ID column.

**Examples**

```
data(tradeweightx)  
is.data.frame(tradeweightx)
```

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