

# Package ‘VIRF’

May 1, 2019

**Type** Package

**Title** Computation of Volatility Impulse Response Function of Multivariate Time Series

**Version** 0.1.0

**Author** Dr. Ranjit Kumar Paul and Mr. Ankit Tanwar

**Maintainer** Dr. Ranjit Kumar Paul <ranjitstat@gmail.com>

**Description**

Computation of volatility impulse response function for multivariate time series model using algorithm by Jin, Lin and Tamvakis (2012) <doi.org/10.1016/j.eneco.2012.03.003>.

**License** GPL

**Imports** stats, rmgarch, mgarchBEKK, gnm, expm, BigVAR, ks, matrixcalc, matlib

**LazyData** TRUE

**NeedsCompilation** no

**Repository** CRAN

**Date/Publication** 2019-05-01 06:50:03 UTC

## R topics documented:

VIRF .....	1
<b>Index</b>	<b>3</b>

---

VIRF *Volatility Impulse Response Function*

---

### Description

Provide information about the impact of independent shocks on volatility.

**Usage**

```
VIRF(data, shock)
```

**Arguments**

data	log return multivariate time series
shock	shock time point from time series

**Value**

virfresult	List containing variance and covariance values
------------	--

**References**

Anthony, N.R. and Ahammad, S.M. 2016. Investigating the interdependency of agricultural production volatility spillovers between Bangladesh, India, and Pakistan. *Review of Urban and Regional Development Studies*, 28, 32 to 54

Jin, X., Lin, S.X. and Tamvakis, M. 2012. Volatility transmission and volatility impulse response functions in crude oil markets. *Energy Economics*, 34, 2125 to 2134

**Examples**

```
k=3 #number of series
p=6 # maximum lag order
ns=100 #number of simulations
B=matrix(0,nrow=k,ncol=p*k)
A1<- matrix(c(.4,-.02,.01,-.02,.3,.02,.01,.04,.3),ncol=3,nrow=3)
A2 <- matrix(c(.2,0,0,0,.3,0,0,0,.13),ncol=3,nrow=3)
B[,1:k]=A1
B[(4*k+1):(5*k)]=A2
A <- BigVAR::VarptoVar1MC(B,p,k)
Y <-BigVAR::MultVarSim(k,A,p,.1*diag(k),ns)
lr<-VIRF(Y,40) # Y: multivariate time series data, shock time point: 40
print(lr)
```

# Index

VIRF, 1