

# Package ‘ECTSVR’

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**Type** Package

**Title** Cointegration Based Support Vector Regression Model

**Version** 0.1.0

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**Depends** R (>= 3.3.0),urca,vars,WeightSVM

## Description

The cointegration based support vector regression model enables researchers to use data obtained from the cointegrating vector as input in the support vector regression model.

**Encoding** UTF-8

**License** MIT + file LICENSE

**NeedsCompilation** no

**Suggests** knitr, rmarkdown, testthat (>= 3.0.0)

**VignetteBuilder** knitr

**Config/testthat/edition** 3

**RoxygenNote** 7.2.3

**Repository** CRAN

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ECTSVR

*Cointegration Based Support Vector Regression Model***Description**

The cointegration based support vector regression model is a combination of error correction model and support vector regression (<http://krishi.icar.gov.in/jspui/handle/123456789/72361>). This hybrid model allows the researcher to make use of the information extracted by the cointegrating vector as an input in the support vector regression model

**Usage**

```
ECTSVR(data, type = "", t, l, ker.funct = "", svm.type = "", verbose = FALSE)
```

**Arguments**

data	A cointegrated time series data
type	Type of cointegration test to be used. Either "trace" or "eigen" value based
t	Partition value for splitting the data set into training and testing
l	Number of lags used for the support vector machine model fitting
ker.funct	The available choices of kernel functions like radial basis, linear, polynomial and sigmoid for fitting support vector regression. By default radial basis function works
svm.type	SVM can be used as a regression machine. User can apply eps-regression or nu-regression. By default the ECTSVR uses eps-regression
verbose	It is a logical parameter, represented by Boolean variables. This argument accepts either TRUE or FALSE values.

**Details**

ECTSVR uses the concept of cointegration based Timedelay Neural network model proposed by Das (2019). First the cointegration of the data series is identified by Johansen cointegration test. Then error correction model is fitted for the estimation of parameters i.e. Beta and error correction term (ECT). The estimated ECT is used as an auxiliary information in support vector regression model fitting. Then the support vector regression model is used for forecasting of the data series.

**Value**

Prediction performance of the ECTSVR model with outsample prediction values

**Note**

The variables in data should be cointegrated and the dependent variable should be first in data. Otherwise result will be statistically validated.

**Author(s)**

Pankaj Das

**References**

1. Das, P. (2019). Study On Machine Learning Techniques Based Hybrid Model for Forecasting in Agriculture. Unpublished Ph.D. Thesis. (<http://krishikosh.egranth.ac.in/handle/1/5810147805>).
2. Das, P., Jha, G. K. and Lama, A. (2021). An Improved Cointegration based Time Delay Neural Network Model for Price Forecasting. *Journal of the Indian Society of Agricultural Statistics* 75(3) 2021 187–192 (<http://krishi.icar.gov.in/jspui/handle/123456789/72361>)

**Examples**

```
data(finland)
data_example<-finland[,4:3]
ECTSVR(data_example,"trace",0.8,2, "radial", "eps-regression", verbose = FALSE)
```

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