

Package ‘dynpanel’

October 13, 2022

Type Package

Title Dynamic Panel Data Models

Version 0.1.0

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Description Computes the first stage GMM estimate of a dynamic linear model with p lags of the dependent variables.

License GPL-3

LazyData TRUE

RoxygenNote 5.0.1

Depends R (>= 3.3.0)

Imports stats, gtools

NeedsCompilation no

Repository CRAN

Date/Publication 2016-08-28 13:24:47

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dynpanel-package *Dynamic Panel Data Models*

Description

This package computes the first stage GMM estimate of a dynamic linear model with p lags of the dependent variables.

Details

Package: dynpanel
Type: Package
Version: 1.0
Date: 2016-08-26
License: GPL-3

In this package, we apply the generalized method of moments to estimate the dynamic panel data models.

Author(s)

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References

- Anderson, T. W.; Hsiao, Cheng (1981). Estimation of dynamic models with error components. *Journal of the American Statistical Association*. **76** (375), pp. 598-606.
- Arellano, Manuel; Bond, Stephen (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*. **58**, pp.2)-277.
- Cameron, A. Colin; Trivedi, Pravin K. (2005). Dynamic Models. *Microeconometrics: Methods and Applications*. New York: Cambridge University Press. pp. 763-768.
- Hsiao, Cheng (2014). Dynamic Simultaneous Equations Models. *Analysis of Panel Data*. New York: Cambridge University Press. pp. 397-402.
- Munnell AH (1990). Why has Productivity Growth Declined? Productivity and Public Investment, *New England Economic Review*, pp. 3-22.

Examples

```
# Load data
data(Produc)
# Fit the dynamic panel data using the Arellano Bond (1991) instruments
reg<-dpd(log(gsp) ~ log(pcap) + log(pc) + log(emp) + unemp,Produc,index=c("state","year"),1,4)
summary(reg)
```

```

# Fit the dynamic panel data using an automatic selection of appropriate IV matrix
#reg<-dpd(log(gsp) ~ log(pcap) + log(pc) + log(emp) + unemp,Produc,index=c("state","year"),1,0)
#summary(reg)
# Fit the dynamic panel data using the GMM estimator with the smallest set of instruments
#reg<-dpd(log(gsp) ~ log(pcap) + log(pc) + log(emp) + unemp,Produc,index=c("state","year"),1,1)
#summary(reg)
# Fit the dynamic panel data using a reduced form of IV from method 3
#reg<-dpd(log(gsp) ~ log(pcap) + log(pc) + log(emp) + unemp,Produc,index=c("state","year"),1,2)
#summary(reg)
# Fit the dynamic panel data using the IV matrix where the number of moments grows with kT
# K: variables number and T: time per group
#reg<-dpd(log(gsp) ~ log(pcap) + log(pc) + log(emp) + unemp,Produc,index=c("state","year"),1,3)
#summary(reg)

```

dpd	<i>method</i>
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Description

method

Usage

dpd(x, ...)

Arguments

x	a numeric design matrix for the model.
...	not used

Author(s)

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dpd.formula	<i>formula</i>
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Description

formula

Usage

```

## S3 method for class 'formula'
dpd(formula, data = list(), index = c("id", "time"), p,
    meth = c(0, 1, 2, 3, 4), ...)

```

Arguments

formula	PIB~INF+TIR
data	the dataframe
index	: id is the name of the identity groups and time is the time per group
p	scalar, autoregressive order for dependent variable
meth	scalar, indicator for the Instruments to use
...	not used

 Produc

US States Production

Description

- statethe state
- yearthe year
- pcappprivate capital stock
- hwyhighway and streets
- waterwater and sewer facilities
- utilother public buildings and structures
- pcpublic capital
- gspgross state products
- emplabor input measured by the employment in non–agricultural payrolls
- unempstate unemployment rate

Usage

```
data(Produc)
```

Format

A data frame with 816 rows and 10 variables

summary.dpd

Summary

Description

Summary

Usage

```
## S3 method for class 'dpd'  
summary(object, ...)
```

Arguments

object	is the object of the function
...	not used

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