Package 'poobly'

July 23, 2025

Type Package

Title Poolability Tests in Panel Data

Version 0.1.2

Maintainer Christos Adam <econp266@econ.soc.uoc.gr>

Description Homogeneity tests of the coefficients in panel data. Currently, only the Hsiao test for determining coefficient homogeneity between the panel data individuals is implemented, as described in Hsiao (2022), ``Analysis of Panel Data'' (<doi:10.1017/9781009057745>).

License GPL-3

Encoding UTF-8

URL https://github.com/cadam00/poobly, https://cadam00.github.io/poobly/

BugReports https://github.com/cadam00/poobly/issues

Imports stats, methods, plm

Suggests Rfast, Rfast2, knitr, rmarkdown, testthat (>= 3.0.0)

VignetteBuilder knitr, rmarkdown

Config/testthat/edition 3

NeedsCompilation no

Author Christos Adam [aut, cre] (ORCID: <https://orcid.org/0009-0003-3244-7034>)

Repository CRAN

Date/Publication 2025-05-09 17:50:06 UTC

Contents

hsiao *Hsiao test*

Description

Hsiao poolability test, as described by Hsiao (1986;2022).

Usage

```
hsiao(formula, data, index = NULL, ...)
```

Arguments

formula	formula object for plm::plm function.
data	plm::pdata.frame or data.frame object for input. Note that for the data.frame an additional index should be given.
index	An index input for plm::pdata.frame in case that data.frame is given instead of plm::pdata.frame.
...	Rest arguments passed to plm::plm. Note that 'model' and 'effect' can not be used in the current hsiao function and in such a case an error will be triggered.

Details

Hsiao (1986;2022) poolability/homogeneity test consists of three consecutive tests. One for testing if the slope and constant coefficients are same across the panel. If it is not the case, then a second test is conducted, with the heterogeneity of both slope and constant coefficients as alternative hypothesis. If this second hypothesis is not rejected, then the final third hypothesis is tested, where the null of the same slope and constant against the alternative of same slopes but different constants is tested.

Value

hsiao and list object with hypotheses with their corresponding F-statistics, degrees of freedom, and p-values.

Note

Acknowledgments: We would like to acknowledge Dr. Kevin Tappe from the University of Stuttgart for useful suggestions regarding both the code and the documentation.

References

Hsiao, C. (1986) *Analysis of Panel Data*. 1st edn. Cambridge: Cambridge University Press (Econometric Society Monographs).

Hsiao, C. (2022) *Analysis of Panel Data*. 4th edn. Cambridge: Cambridge University Press (Econometric Society Monographs), pp. 43-49.

Examples

```
library(plm)
data("Gasoline", package = "plm")

x <- hsiao(lgaspcar ~ lincomep + lrpmg + lcarpcap, Gasoline)
print(x)
##
##                     Hsiao Homogeneity Test
##
## Hypothesis| Null |                 Alternative
## ----------+------+-------------------------------------------
##     H1    |Pooled|                    H2
##     H2    |  H3  |      Heterogeneous intercepts & slopes
##     H3    |Pooled|Heterogeneous intercepts & homogeneous slopes
## ============================================================
##
## formula: lgaspcar ~ lincomep + lrpmg + lcarpcap
##
##     Hypothesis  F-statistic     df1         df2       p-value
##   1     H1       129.3166       68          270       < 0.001
##   2     H2        27.3352       51          270       < 0.001
##   3     H3        83.9608       17          321       < 0.001
```

Index