

# Package ‘poobly’

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**Type** Package

**Title** Poolability Tests in Panel Data

**Version** 0.1.2

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**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](https://doi.org/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

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**Repository** CRAN

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`hsiao`*Hsiao test*

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**Description**

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

**Usage**

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

**Arguments**

<code>formula</code>	formula object for <code>plm::plm</code> function.
<code>data</code>	<code>plm::pdata.frame</code> or <code>data.frame</code> object for input. Note that for the <code>data.frame</code> an additional <code>index</code> should be given.
<code>index</code>	An index input for <code>plm::pdata.frame</code> in case that <code>data.frame</code> is given instead of <code>plm::pdata.frame</code> .
<code>...</code>	Rest arguments passed to <code>plm::plm</code> . Note that 'model' and 'effect' can not be used in the current <code>hsiao</code> 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 + lrpmpg + 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 + lrpmpg + 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

```

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