Testes de cointegração

Testes de co-integração para várias combinações das variáveis

$$\text{spread} = \beta_0 + \beta_1 \text{selic} + \beta_2 \text{inad} + \beta_3 \text{pib\_mensal} + \beta_4 \text{igp} + \beta_5 \text{ihh}$$

Teste de co-integração Phillips-Ouliaris

Aplicação do teste PO de co-integração do tipo "Pz", que não requer que se especifique qual é a variável dependente.

A hipótese nula é de que as séries não co-integram. Nenhuma combinação delas parece co-integrar.

nomes	teststat	cval
spread, selic	5.25	40.82
spread, inad	6.99	40.82
spread, ihh	4.43	40.82
selic, inad	5.76	40.82
selic, ihh	4.95	40.82
inad, ihh	4.43	40.82

nomes	teststat	cval
spread, selic, inad	11.38	71.28
spread, selic, ihh	7.36	71.28
spread, inad, ihh	6.61	71.28
selic, inad, ihh	6.59	71.28

Teste de Engle-Granger

```
[[1]]
       lag         EG p.value
type 1   1  0.2225307     0.1
type 2   1  2.1850678     0.1
type 3   1 -2.2022187     0.1


Response: with(series, spread)
Input: with(series, inad)
Number of inputs: 1
Model: y ~ X + 1
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Engle-Granger Cointegration Test
alternative: cointegrated

Type 1: no trend
    lag      EG p.value
```

```
  1.000  -0.839   0.100
-----
 Type 2: linear trend
    lag      EG p.value
   1.00    1.15    0.10
-----
 Type 3: quadratic trend
    lag      EG p.value
  1.000   0.432   0.100
-----------
Note: p.value = 0.01 means p.value <= 0.01
    : p.value = 0.10 means p.value >= 0.10


Response: with(series, spread)
Input: with(series, ihh)
Number of inputs: 1
Model: y ~ X + 1
------------------------------
Engle-Granger Cointegration Test
alternative: cointegrated

Type 1: no trend
    lag      EG p.value
   1.00   -1.34    0.10
-----
 Type 2: linear trend
    lag      EG p.value
  1.000  -0.336   0.100
-----
 Type 3: quadratic trend
    lag      EG p.value
 1.0000  0.0515  0.1000
-----------
Note: p.value = 0.01 means p.value <= 0.01
    : p.value = 0.10 means p.value >= 0.10


Response: with(series, spread)
Input: series[, c("selic", "inad")] %>% as.matrix
Number of inputs: 2
Model: y ~ X + 1
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Engle-Granger Cointegration Test
alternative: cointegrated

Type 1: no trend
    lag      EG p.value
  1.000   0.801   0.100
-----
 Type 2: linear trend
    lag      EG p.value
   1.00    2.01    0.10
-----
```

```
 Type 3: quadratic trend
    lag      EG p.value
   1.00   -1.81    0.10
-----------
Note: p.value = 0.01 means p.value <= 0.01
    : p.value = 0.10 means p.value >= 0.10


Response: with(series, spread)
Input: series[, c("selic", "ihh")] %>% as.matrix
Number of inputs: 2
Model: y ~ X + 1
------------------------------
Engle-Granger Cointegration Test
alternative: cointegrated

Type 1: no trend
    lag      EG p.value
   1.00   -1.22    0.10
-----
 Type 2: linear trend
    lag      EG p.value
  1.000   0.721   0.100
-----
 Type 3: quadratic trend
    lag      EG p.value
   1.00   -1.59    0.10
-----------
Note: p.value = 0.01 means p.value <= 0.01
    : p.value = 0.10 means p.value >= 0.10


Response: with(series, spread)
Input: series[, c("inad", "ihh")] %>% as.matrix
Number of inputs: 2
Model: y ~ X + 1
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Engle-Granger Cointegration Test
alternative: cointegrated

Type 1: no trend
    lag      EG p.value
   1.00   -2.34    0.10
-----
 Type 2: linear trend
    lag      EG p.value
  1.000  -0.103   0.100
-----
 Type 3: quadratic trend
    lag      EG p.value
  1.000  -0.519   0.100
-----------
Note: p.value = 0.01 means p.value <= 0.01
    : p.value = 0.10 means p.value >= 0.10
```

Teste de Johansen

Sem intercepto

```
Length  Class   Mode
     1  ca.jo     S4
```

Com intercepto

```
Length  Class   Mode
     1  ca.jo     S4
```

Com tendência

```
Length  Class   Mode
     1  ca.jo     S4
```