*Juan Menduiña*

# Trabajo Práctico N° 5

## Ejercicio 1.

*El archivo "ind.dta" contiene información sobre 17 indicadores económicos:*

| Variable | Indicador |
|---|---|
| X1 | Agricultural land (% of land area) |
| X2 | Agriculture, value added (% of GDP) |
| X3 | CO2 emissions (metric tons per capita) |
| X4 | Exports of goods and services (% of GDP) |
| X5 | Fertility rate, total (births per woman) |
| X6 | Fixed line and mobile phone subscribers (per 1000 people) |
| X7 | GDP growth (annual) |
| X8 | Immunization, measles (% of children ages 12-23 months) |
| X9 | Imports of goods and services (% of GDP) |
| X10 | Industry, value added (% of GDP) |
| X11 | Inflation, GDP deflator (annual %) |
| X12 | Internet users (per 1000 people) |
| X13 | Life expectancy at birth, total (years) |
| X14 | Merchandise trade (% of GDP) |
| X15 | Mortality rate, infant (per 1000 live births) |
| X16 | Mortality rate, under 5 (per 1000) |
| X17 | Population growth (annual %) |

**(a)** *Realizar un test de normalidad multivariada.*

```
Test for multivariate normality

    Mardia mSkewness =  293.0869   chi2(969) = 8076.406   Prob>chi2 =  0.0000
    Mardia mKurtosis =  589.9546     chi2(1) = 4467.836   Prob>chi2 =  0.0000
    Henze-Zirkler    =   1.28147     chi2(1) =33372.390   Prob>chi2 =  0.0000
    Doornik-Hansen                  chi2(34) =10057.382   Prob>chi2 =  0.0000
```

Por lo tanto, con un nivel de significancia del 1%, estos datos aportan evidencia suficiente para indicar que no tienen una distribución normal multivariada.

```
Test for multivariate normality

    Mardia mSkewness =  101.7785   chi2(969) = 1820.830   Prob>chi2 =  0.0000
    Mardia mKurtosis =  364.9691     chi2(1) =   70.893   Prob>chi2 =  0.0000
    Henze-Zirkler    =  1.014665     chi2(1) =  122.887   Prob>chi2 =  0.0000
    Doornik-Hansen                  chi2(34) =  313.331   Prob>chi2 =  0.0000
```

Por lo tanto, con un nivel de significancia del 1%, estos datos aportan evidencia suficiente para indicar que no tienen una distribución normal multivariada.

**(b)** *Determinar el número de factores a extraer.*

```
Factor analysis/correlation                      Number of obs    =        162
    Method: principal factors                    Retained factors =         10
    Rotation: (unrotated)                        Number of params =        125
```

| Factor | Eigenvalue | Difference | Proportion | Cumulative |
|---|---|---|---|---|
| Factor1 | 6.39667 | 4.13220 | 0.5822 | 0.5822 |
| Factor2 | 2.26447 | 1.08372 | 0.2061 | 0.7883 |
| Factor3 | 1.18075 | 0.47077 | 0.1075 | 0.8957 |
| Factor4 | 0.70998 | 0.16765 | 0.0646 | 0.9604 |
| Factor5 | 0.54233 | 0.26020 | 0.0494 | 1.0097 |
| Factor6 | 0.28213 | 0.09976 | 0.0257 | 1.0354 |
| Factor7 | 0.18238 | 0.09753 | 0.0166 | 1.0520 |
| Factor8 | 0.08485 | 0.06604 | 0.0077 | 1.0597 |
| Factor9 | 0.01881 | 0.01822 | 0.0017 | 1.0614 |
| Factor10 | 0.00059 | 0.00898 | 0.0001 | 1.0615 |
| Factor11 | -0.00840 | 0.01935 | -0.0008 | 1.0607 |
| Factor12 | -0.02775 | 0.03482 | -0.0025 | 1.0582 |
| Factor13 | -0.06257 | 0.03448 | -0.0057 | 1.0525 |
| Factor14 | -0.09706 | 0.02685 | -0.0088 | 1.0437 |
| Factor15 | -0.12391 | 0.03113 | -0.0113 | 1.0324 |
| Factor16 | -0.15504 | 0.04577 | -0.0141 | 1.0183 |
| Factor17 | -0.20081 | . | -0.0183 | 1.0000 |

```
    LR test: independent vs. saturated: chi2(136) = 2464.59 Prob>chi2 = 0.0000
```

Factor loadings (pattern matrix) and unique variances

| Variable | Factor1 | Factor2 | Factor3 | Factor4 | Factor5 | Factor6 | Factor7 | Factor8 | Factor9 | Factor10 | Uniqueness |
|---|---|---|---|---|---|---|---|---|---|---|---|
| x1 | -0.1011 | 0.0073 | -0.2529 | 0.1506 | -0.0530 | 0.0688 | 0.3052 | 0.0205 | -0.0004 | 0.0005 | 0.8020 |
| x2 | -0.7498 | -0.0044 | -0.1385 | 0.2422 | -0.0394 | 0.0634 | -0.1638 | 0.1517 | -0.0301 | -0.0050 | 0.3036 |
| x3 | 0.6551 | -0.0201 | 0.3683 | -0.1094 | 0.0635 | -0.0960 | 0.0737 | 0.1535 | -0.0156 | -0.0033 | 0.3804 |
| x4 | 0.4284 | 0.8210 | 0.0432 | 0.0381 | -0.0608 | -0.0534 | 0.0000 | 0.0313 | -0.0574 | -0.0006 | 0.1282 |
| x5 | -0.8124 | 0.1095 | 0.2020 | -0.0115 | 0.0598 | -0.1511 | -0.0400 | -0.0163 | 0.0618 | 0.0011 | 0.2550 |
| x6 | 0.7793 | -0.1949 | 0.4131 | 0.3098 | -0.0566 | 0.0920 | 0.0597 | -0.0461 | -0.0030 | 0.0022 | 0.0708 |
| x7 | 0.1398 | 0.1956 | 0.0440 | -0.1209 | 0.4829 | 0.2649 | -0.0576 | 0.0165 | -0.0076 | -0.0020 | 0.6186 |
| x8 | 0.7332 | -0.0219 | -0.3124 | -0.0741 | 0.0689 | -0.0115 | 0.0677 | 0.1534 | 0.0705 | 0.0014 | 0.3209 |
| x9 | 0.2591 | 0.7625 | -0.2627 | 0.3534 | -0.0507 | -0.1093 | -0.0099 | -0.0036 | 0.0022 | 0.0032 | 0.1429 |
| x10 | 0.2370 | 0.3700 | 0.2722 | -0.4667 | -0.1433 | 0.0304 | 0.0685 | -0.0054 | -0.0204 | 0.0002 | 0.4885 |
| x11 | -0.2111 | 0.1827 | 0.2023 | -0.1510 | -0.4183 | 0.0839 | -0.0950 | 0.0575 | 0.0347 | 0.0019 | 0.6627 |
| x12 | 0.6562 | -0.1771 | 0.5314 | 0.3422 | 0.0060 | 0.0053 | -0.0412 | 0.0197 | 0.0210 | -0.0020 | 0.1360 |
| x13 | 0.9098 | -0.1873 | -0.1503 | -0.0537 | 0.0298 | -0.0103 | -0.1288 | 0.0122 | -0.0150 | 0.0172 | 0.0935 |
| x14 | 0.2948 | 0.7954 | 0.0793 | 0.0140 | 0.1124 | 0.0803 | -0.0346 | -0.0541 | 0.0555 | -0.0022 | 0.2477 |
| x15 | -0.9450 | 0.1666 | 0.2159 | 0.0522 | 0.0733 | 0.1018 | 0.0686 | 0.0488 | -0.0015 | 0.0144 | 0.0069 |
| x16 | -0.9385 | 0.1462 | 0.2639 | 0.0913 | 0.0316 | 0.0786 | 0.0749 | 0.0364 | -0.0049 | 0.0028 | 0.0057 |
| x17 | -0.3169 | 0.0364 | 0.1941 | -0.0477 | 0.2597 | -0.3415 | 0.0159 | 0.0117 | -0.0104 | 0.0021 | 0.6737 |

Por lo tanto, el número de factores a extraer es 6.

**(c)** *Realizar el análisis exploratorio de acuerdo con el modelo factorial.*

```
Factor analysis/correlation                      Number of obs    =        162
    Method: principal factors                    Retained factors =          6
    Rotation: (unrotated)                        Number of params =         87
```

| Factor | Eigenvalue | Difference | Proportion | Cumulative |
|---|---|---|---|---|
| Factor1 | 6.39667 | 4.13220 | 0.5822 | 0.5822 |
| Factor2 | 2.26447 | 1.08372 | 0.2061 | 0.7883 |
| Factor3 | 1.18075 | 0.47077 | 0.1075 | 0.8957 |
| Factor4 | 0.70998 | 0.16765 | 0.0646 | 0.9604 |
| Factor5 | 0.54233 | 0.26020 | 0.0494 | 1.0097 |
| Factor6 | 0.28213 | 0.09976 | 0.0257 | 1.0354 |
| Factor7 | 0.18238 | 0.09753 | 0.0166 | 1.0520 |
| Factor8 | 0.08485 | 0.06604 | 0.0077 | 1.0597 |
| Factor9 | 0.01881 | 0.01822 | 0.0017 | 1.0614 |
| Factor10 | 0.00059 | 0.00898 | 0.0001 | 1.0615 |
| Factor11 | -0.00840 | 0.01935 | -0.0008 | 1.0607 |
| Factor12 | -0.02775 | 0.03482 | -0.0025 | 1.0582 |
| Factor13 | -0.06257 | 0.03448 | -0.0057 | 1.0525 |
| Factor14 | -0.09706 | 0.02685 | -0.0088 | 1.0437 |
| Factor15 | -0.12391 | 0.03113 | -0.0113 | 1.0324 |
| Factor16 | -0.15504 | 0.04577 | -0.0141 | 1.0183 |
| Factor17 | -0.20081 | . | -0.0183 | 1.0000 |

```
LR test: independent vs. saturated: chi2(136) = 2464.59 Prob>chi2 = 0.0000
```

Factor loadings (pattern matrix) and unique variances

| Variable | Factor1 | Factor2 | Factor3 | Factor4 | Factor5 | Factor6 | Uniqueness |
|---|---|---|---|---|---|---|---|
| x1 | -0.1011 | 0.0073 | -0.2529 | 0.1506 | -0.0530 | 0.0688 | 0.8956 |
| x2 | -0.7498 | -0.0044 | -0.1385 | 0.2422 | -0.0394 | 0.0634 | 0.3544 |
| x3 | 0.6551 | -0.0201 | 0.3683 | -0.1094 | 0.0635 | -0.0960 | 0.4097 |
| x4 | 0.4284 | 0.8210 | 0.0432 | 0.0381 | -0.0608 | -0.0534 | 0.1325 |
| x5 | -0.8124 | 0.1095 | 0.2020 | -0.0115 | 0.0598 | -0.1511 | 0.2607 |
| x6 | 0.7793 | -0.1949 | 0.4131 | 0.3098 | -0.0566 | 0.0920 | 0.0765 |
| x7 | 0.1398 | 0.1956 | 0.0440 | -0.1209 | 0.4829 | 0.2649 | 0.6223 |
| x8 | 0.7332 | -0.0219 | -0.3124 | -0.0741 | 0.0689 | -0.0115 | 0.3540 |
| x9 | 0.2591 | 0.7625 | -0.2627 | 0.3534 | -0.0507 | -0.1093 | 0.1430 |
| x10 | 0.2370 | 0.3700 | 0.2722 | -0.4667 | -0.1433 | 0.0304 | 0.4937 |
| x11 | -0.2111 | 0.1827 | 0.2023 | -0.1510 | -0.4183 | 0.0839 | 0.6763 |
| x12 | 0.6562 | -0.1771 | 0.5314 | 0.3422 | 0.0060 | 0.0053 | 0.1385 |
| x13 | 0.9098 | -0.1873 | -0.1503 | -0.0537 | 0.0298 | -0.0103 | 0.1108 |
| x14 | 0.2948 | 0.7954 | 0.0793 | 0.0140 | 0.1124 | 0.0803 | 0.2549 |
| x15 | -0.9450 | 0.1666 | 0.2159 | 0.0522 | 0.0733 | 0.1018 | 0.0142 |
| x16 | -0.9385 | 0.1462 | 0.2639 | 0.0913 | 0.0316 | 0.0786 | 0.0127 |
| x17 | -0.3169 | 0.0364 | 0.1941 | -0.0477 | 0.2597 | -0.3415 | 0.6742 |

**(d)** *Reportar las comunalidades.*

```
commonality[17,1]
     commonality
 x1    .10443817
 x2     .6456483
 x3    .59033742
 x4    .86754007
 x5    .73931917
 x6    .92349359
 x7    .37773843
 x8    .64597902
 x9    .85698196
x10    .50634663
x11    .32371151
x12     .8614879
x13    .88924266
x14      .745089
x15    .98584624
x16    .98729607
x17    .32582455
```

# Ejercicio 2.

*El archivo "ipc2dig.dta" contiene datos sobre variaciones mensuales de precios desagregados en componentes de la canasta básica de alimentos para el período comprendido entre marzo de 2022 y marzo de 2006.*

| Variable | Descripción |
|---|---|
| div1 | Alimentos para consumir en el hogar |

| Variable | Descripción |
|---|---|
| div2 | Bebidas e infusiones para consumir en el hogar |
| div3 | Alimentos y bebidas consumidos fuera del hogar |
| div4 | Ropa |
| div5 | Calzado |
| div6 | Accesorios y servicios para la indumentaria |
| div7 | Alquiler de la vivienda |
| div8 | Servicios básicos y combustibles para la vivienda |
| div9 | Reparaciones y gastos comunes de la vivienda |
| div10 | Equipamiento del hogar |
| div11 | Mantenimiento del hogar |
| div12 | Productos medicinales y accesorios terapéuticos |
| div13 | Servicios para la salud |
| div14 | Transporte |
| div15 | Comunicaciones |
| div16 | Turismo |
| div17 | Equipos, conexiones y servicios de audio, televisión y computación |
| div18 | Diarios, revistas y libros |
| div19 | Jueguetes y artículos para deporte |
| div20 | Flores, planes y atención de animales domésticos |
| div21 | Otros servicios de esparcimiento |
| div22 | Servicios educativos |
| div23 | Textos y útiles escolares |
| div24 | Cigarrillos y accesorios |
| div25 | Artículos y servicios para el cuidado personal |
| div26 | Servicios diversos |

**(a)** *Realizar un análisis factorial y determinar el número de factores a considerar en el mismo.*

```
Test for multivariate normality

    Mardia mSkewness =  475.4859  chi2(3276) = 4297.740   Prob>chi2 =  0.0000
    Mardia mKurtosis =  759.9989    chi2(1) =    8.966   Prob>chi2 =  0.0027
    Henze-Zirkler    =  1.000247    chi2(1) =   11.470   Prob>chi2 =  0.0007
    Doornik-Hansen                 chi2(52) =  776.759   Prob>chi2 =  0.0000
```

Por lo tanto, con un nivel de significancia del 1%, estos datos aportan evidencia suficiente para indicar que no tienen una distribución normal multivariada.

```
Factor analysis/correlation                       Number of obs    =         51
    Method: principal factors                     Retained factors =          4
    Rotation: (unrotated)                         Number of params =         98
```

| Factor | Eigenvalue | Difference | Proportion | Cumulative |
|---|---|---|---|---|
| Factor1 | 12.08887 | 9.82667 | 0.6040 | 0.6040 |
| Factor2 | 2.26220 | 0.68136 | 0.1130 | 0.7170 |
| Factor3 | 1.58085 | 0.49465 | 0.0790 | 0.7960 |
| Factor4 | 1.08620 | 0.23100 | 0.0543 | 0.8503 |
| Factor5 | 0.85521 | 0.03978 | 0.0427 | 0.8930 |
| Factor6 | 0.81542 | 0.30611 | 0.0407 | 0.9337 |
| Factor7 | 0.50931 | 0.14179 | 0.0254 | 0.9592 |
| Factor8 | 0.36753 | 0.05479 | 0.0184 | 0.9775 |
| Factor9 | 0.31273 | 0.08655 | 0.0156 | 0.9932 |
| Factor10 | 0.22618 | 0.02765 | 0.0113 | 1.0045 |
| Factor11 | 0.19853 | 0.08151 | 0.0099 | 1.0144 |
| Factor12 | 0.11702 | 0.02778 | 0.0058 | 1.0202 |
| Factor13 | 0.08923 | 0.03101 | 0.0045 | 1.0247 |
| Factor14 | 0.05822 | 0.01640 | 0.0029 | 1.0276 |
| Factor15 | 0.04182 | 0.02055 | 0.0021 | 1.0297 |
| Factor16 | 0.02127 | 0.02397 | 0.0011 | 1.0307 |
| Factor17 | -0.00270 | 0.00399 | -0.0001 | 1.0306 |
| Factor18 | -0.00669 | 0.01393 | -0.0003 | 1.0303 |
| Factor19 | -0.02063 | 0.00605 | -0.0010 | 1.0292 |
| Factor20 | -0.02667 | 0.00824 | -0.0013 | 1.0279 |
| Factor21 | -0.03492 | 0.01923 | -0.0017 | 1.0262 |
| Factor22 | -0.05414 | 0.00437 | -0.0027 | 1.0235 |
| Factor23 | -0.05852 | 0.02775 | -0.0029 | 1.0205 |
| Factor24 | -0.08627 | 0.05588 | -0.0043 | 1.0162 |
| Factor25 | -0.14215 | 0.04044 | -0.0071 | 1.0091 |
| Factor26 | -0.18259 | . | -0.0091 | 1.0000 |

LR test: independent vs. saturated: chi2(325) = 1451.04 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

| Variable | Factor1 | Factor2 | Factor3 | Factor4 | Uniqueness |
|---|---|---|---|---|---|
| div1 | 0.9243 | 0.1403 | 0.0508 | -0.0283 | 0.1226 |
| div2 | 0.9278 | -0.0300 | -0.0495 | -0.1762 | 0.1048 |
| div3 | 0.4967 | 0.5590 | 0.3778 | 0.2111 | 0.2535 |
| div4 | 0.6179 | 0.5234 | -0.4220 | 0.1719 | 0.1366 |
| div5 | 0.8875 | 0.2726 | -0.1709 | 0.0932 | 0.1002 |
| div6 | 0.9735 | 0.0151 | -0.0440 | 0.0602 | 0.0466 |
| div7 | -0.2276 | 0.3753 | 0.0376 | -0.1729 | 0.7760 |
| div8 | 0.2853 | -0.1056 | 0.1629 | 0.4399 | 0.6874 |
| div9 | 0.3114 | 0.0928 | 0.3854 | -0.1314 | 0.7286 |
| div10 | 0.9703 | -0.0469 | -0.0408 | -0.1318 | 0.0373 |
| div11 | 0.9436 | -0.0683 | -0.0171 | -0.1674 | 0.0767 |
| div12 | 0.8900 | 0.1640 | -0.0467 | -0.2200 | 0.1304 |
| div13 | 0.2770 | 0.4537 | 0.4446 | -0.0089 | 0.5197 |
| div14 | 0.9204 | 0.0466 | 0.2044 | 0.1893 | 0.0731 |
| div15 | 0.4895 | -0.4788 | 0.0907 | -0.1398 | 0.5034 |
| div16 | 0.1155 | -0.3809 | 0.5300 | -0.0282 | 0.5599 |
| div17 | 0.9286 | -0.1886 | -0.1047 | -0.1031 | 0.0806 |
| div18 | 0.4423 | -0.1346 | 0.1006 | 0.6517 | 0.3515 |
| div19 | 0.9110 | -0.1410 | -0.1277 | -0.0393 | 0.1324 |
| div20 | 0.6107 | -0.2521 | 0.2895 | 0.1006 | 0.4696 |
| div21 | -0.0193 | 0.5537 | 0.4005 | -0.1749 | 0.5021 |
| div22 | -0.1151 | 0.4670 | -0.2868 | 0.1314 | 0.6691 |
| div23 | 0.8660 | -0.1777 | -0.1542 | 0.0110 | 0.1945 |
| div24 | -0.0563 | -0.2340 | 0.2771 | 0.0114 | 0.8652 |
| div25 | 0.9436 | -0.0199 | -0.0429 | -0.1849 | 0.0732 |
| div26 | -0.2469 | 0.2354 | 0.2200 | -0.2191 | 0.7872 |

Por lo tanto, el número de factores a considerar en el análisis factorial es 4.

**(b)** *Estimar los factores.*

Scoring coefficients (method = regression)

| Variable | Factor1 | Factor2 | Factor3 | Factor4 |
|---|---|---|---|---|
| div1 | 0.07925 | 0.18186 | -0.05170 | -0.59974 |
| div2 | 0.04326 | -0.11339 | 0.05872 | -0.44253 |
| div3 | -0.00436 | 0.23518 | 0.16104 | 0.00260 |
| div4 | -0.01953 | 0.49494 | -0.53807 | 0.41634 |
| div5 | 0.12488 | 0.03240 | -0.02813 | 0.20538 |
| div6 | 0.16392 | -0.03118 | 0.05927 | -0.04948 |
| div7 | -0.01557 | 0.14109 | -0.03078 | -0.16704 |
| div8 | 0.00063 | -0.02647 | -0.04099 | 0.06205 |
| div9 | 0.00216 | 0.03724 | 0.10942 | -0.12597 |
| div10 | 0.14911 | -0.26471 | 0.01094 | -1.20009 |
| div11 | 0.09499 | 0.06966 | 0.00325 | -0.03244 |
| div12 | 0.01092 | 0.24549 | 0.00071 | -0.26581 |
| div13 | 0.02381 | 0.10769 | 0.21193 | 0.03472 |
| div14 | 0.13740 | 0.10581 | 0.60434 | 1.43553 |
| div15 | 0.01255 | -0.06698 | 0.04572 | -0.03451 |
| div16 | -0.01914 | -0.03677 | 0.11613 | -0.08001 |
| div17 | 0.03816 | -0.41828 | -0.26528 | -0.14701 |
| div18 | 0.03628 | -0.13264 | 0.05431 | 0.21385 |
| div19 | 0.05068 | -0.03080 | -0.18010 | 0.06339 |
| div20 | 0.02680 | -0.09034 | 0.13100 | 0.09015 |
| div21 | -0.00201 | 0.13760 | 0.18718 | -0.13885 |
| div22 | -0.00168 | 0.10451 | -0.08293 | -0.07340 |
| div23 | 0.01771 | -0.03543 | -0.21777 | 0.40487 |
| div24 | 0.00482 | -0.04115 | 0.10567 | 0.04613 |
| div25 | 0.11943 | 0.01387 | 0.03226 | 0.25898 |
| div26 | 0.00484 | 0.04779 | 0.08075 | -0.01031 |

**(c)** *Analizar los residuos del modelo, con arreglo a los supuestos considerados.*

Test for multivariate normality

| | | | |
|---|---|---|---|
| Mardia mSkewness = | 475.4859 | chi2(3276) = 4297.740 | Prob>chi2 = 0.0000 |
| Mardia mKurtosis = | 759.9989 | chi2(1) = 8.966 | Prob>chi2 = 0.0027 |
| Henze-Zirkler = | 1.000247 | chi2(1) = 11.470 | Prob>chi2 = 0.0007 |
| Doornik-Hansen | | chi2(52) = 601.620 | Prob>chi2 = 0.0000 |

Por lo tanto, con un nivel de significancia del 1%, estos datos aportan evidencia suficiente para indicar que los residuos no tienen una distribución normal multivariada.

```
Test that covariance matrix is diagonal

 Adjusted LR chi2(325) =    944.31
           Prob > chi2 =    0.0000
```

Por lo tanto, con un nivel de significancia del 1%, estos datos aportan evidencia suficiente para indicar que la matriz de varianzas y covarianzas de los residuos no es diagonal.

**(d)** *Obtener las principales medidas estadísticas que permitan inferir acerca de la bondad del ajuste del modelo estimado.*

Coeficiente de correlación al cuadrado entre cada variable observable y los factores:

```
rho2_1 = .98497393
rho2_2 = .98902324
rho2_3 = .93575745
rho2_4 = .98133713
rho2_5 = .9899648
rho2_6 = .99782874
rho2_7 = .39777721
rho2_8 = .52745178
rho2_9 = .46913039
rho2_10 = .99861103
rho2_11 = .99412209
rho2_12 = .98300747
rho2_13 = .72994253
rho2_14 = .9946607
rho2_15 = .74662227
rho2_16 = .68655422
rho2_17 = .99350546
rho2_18 = .87645452
rho2_19 = .98246967
rho2_20 = .77948868
rho2_21 = .74787243
rho2_22 = .5522995
rho2_23 = .96217425
rho2_24 = .25149728
rho2_25 = .99464147
rho2_26 = .38029008
```

Coeficiente de determinación= 0,12818739.