PRÁCTICA CALIFICDA DE ECONOMETRÍA I

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1. Elegir un modelo con dos mejores variables explicativas.

Variable endógena: Cumgpa

Variables exógenas:

* Crsgpa
* Sat
* Hsperc
* Hsrank
* Hssixe
* Tothrs

Realizamos la regresion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CUMGPA | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 11/19/20 Time: 09:48 | | | |  |
| Sample: 1 732 | | |  |  |
| Included observations: 732 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | -1.125635 | 0.489911 | -2.297631 | 0.0219 |
| CRSGPA | 0.728499 | 0.157549 | 4.623965 | 0.0000 |
| SAT | 0.000952 | 0.000206 | 4.626650 | 0.0000 |
| HSPERC | -0.003960 | 0.002686 | -1.474108 | 0.1409 |
| HSRANK | -0.000922 | 0.000696 | -1.324414 | 0.1858 |
| HSSIZE | 0.000272 | 0.000301 | 0.902113 | 0.3673 |
| TOTHRS | 0.010179 | 0.000999 | 10.19127 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.259197 | Mean dependent var | | 2.080861 |
| Adjusted R-squared | 0.253066 | S.D. dependent var | | 0.989617 |
| S.E. of regression | 0.855280 | Akaike info criterion | | 2.534740 |
| Sum squared resid | 530.3397 | Schwarz criterion | | 2.578689 |
| Log likelihood | -920.7148 | Hannan-Quinn criter. | | 2.551694 |
| F-statistic | 42.27798 | Durbin-Watson stat | | 2.020110 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Se observa que las variables HSPERC, HSRANK y HSSIZE son variables no significativas ya que sus P-Value son mayores a 0.05, por tanto, son variables redundantes que no tienen efectos en la variable endógena.

La modelo es de la siguiente forma:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CUMGPA | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 11/19/20 Time: 10:26 | | | |  |
| Sample: 1 732 | | |  |  |
| Included observations: 732 | | |  |  |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
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|  |  |  |  |  |
| C | 0.389803 | 0.188165 | 2.071604 | 0.0387 |
| SAT | 0.001225 | 0.000194 | 6.303223 | 0.0000 |
| TOTHRS | 0.012548 | 0.000931 | 13.48491 | 0.0000 |
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|  |  |  |  |  |
| R-squared | 0.218029 | Mean dependent var | | 2.080861 |
| Adjusted R-squared | 0.215884 | S.D. dependent var | | 0.989617 |
| S.E. of regression | 0.876309 | Akaike info criterion | | 2.577894 |
| Sum squared resid | 559.8118 | Schwarz criterion | | 2.596729 |
| Log likelihood | -940.5092 | Hannan-Quinn criter. | | 2.585160 |
| F-statistic | 101.6299 | Durbin-Watson stat | | 1.960490 |
| Prob(F-statistic) | 0.000000 |  |  |  |
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las variables que mejor explica a CUMGPA son las siguientes SAT y TOTHRS, ya que son significativos con P-Value menor a O.05. El SAT como CRSGPA tiene una relación directa con la variable endógena.

1. Evaluar la Multicolinealidad, Heteroscedasticidad y Autocorrelación.

MULTICOLINEALIDAD

MATRIZ DE CORRELACIÓN

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| --- | --- | --- | --- |
|  | **CUMGPA** | **SAT** | **TOTHRS** |
| **CUMGPA** | 1 | 0.151569109091533 | 0.4188217731356013 |
| **SAT** | 0.151569109091533 | 1 | -0.1270203601681987 |
| **TOTHRS** | 0.4188217731356013 | -0.1270203601681987 | 1 |

R CUMGPA SAT=0.151 No existe una relación lineal entre las variables EXOGENAS por lo tanto podemos concluir que no existe multicolinealidad en el modelo. Según el criterio de la varianza inflacionaria de los factores no resulta que ninguno excede al valor mínimo de 10 que es criterio de esta metodología por lo tanto concluimos que no existe multicolinealidad en la regresión



HETEROCEDASTICIDAD

El test: white

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| --- | --- | --- | --- | --- |
| Heteroskedasticity Test: White | | | |  |
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|  |  |  |  |  |
| F-statistic | 125.3937 | Prob. F(5,726) | | 0.0000 |
| Obs\*R-squared | 339.2104 | Prob. Chi-Square(5) | | 0.0000 |
| Scaled explained SS | 444.5465 | Prob. Chi-Square(5) | | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |

H0= hay homocedasticidad

H1= hay heterocedasticidad

Podemos concluir que tenemos los criterios suficientes para rechazamos la hipótesis nula y aceptar la alternativa donde existe homocedasticidad en nuestro modelo

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| --- | --- | --- | --- | --- |
| Heteroskedasticity Test: Breusch-Pagan-Godfrey | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 135.9240 | Prob. F(2,729) | | 0.0000 |
| Obs\*R-squared | 198.8242 | Prob. Chi-Square(2) | | 0.0000 |
| Scaled explained SS | 260.5657 | Prob. Chi-Square(2) | | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |

Con la prueba de breusch – pagan- godfrey concluimos que existe heterocedasticidad ya que tenemos los criterios suficientes para rechazar la hipótesis nula y aceptar la alternativa.