

ANEXOS

Anexos

Anexo 1. Base de datos de las variables de estudio, periodo 2006-2022

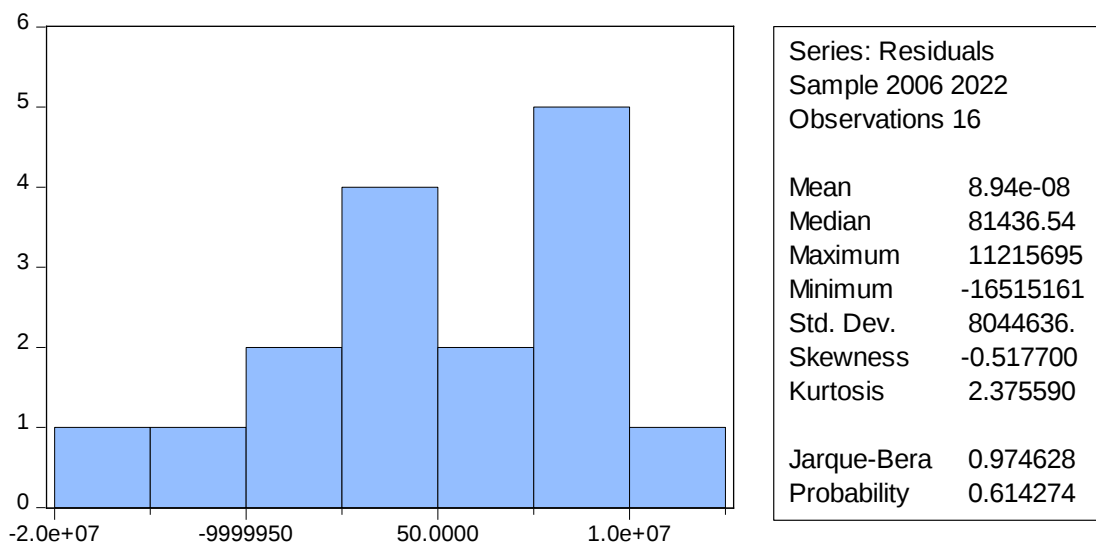
AÑO	PIB nominal (miles de Bs.)	Gasto Público en educación regular (en Bs.)	Tasa de Abandono (%)	Tasa de Promoción (%)	Tasa de Reprobación (%)
2006	91.747.795	4.224.068.430	6,4	87,7	5,9
2007	103.009.182	5.072.492.141	5,1	88,7	6,2
2008	120.693.764	5.907.412.764	5,3	89,3	5,4
2009	121.726.745	6.789.774.837	3,4	91,3	5,3
2010	137.875.568	7.170.417.948	3,4	90,6	6,0
2011	166.231.563	7.974.559.179	2,2	92,1	5,7
2012	187.153.878	9.352.747.952	2,7	92,1	5,2
2013	211.856.032	11.242.038.505	2,9	93,0	4,1
2014	228.003.659	13.257.293.454	2,9	95,2	1,9
2015	228.031.370	14.293.134.689	3,3	94,4	2,3
2016	234.533.182	14.253.243.372	3,4	94,3	2,3
2017	259.184.717	15.894.049.748	2,7	94,8	2,6
2018	278.387.647	17.702.658.097	2,5	94,7	2,8
2019	282.586.681	17.358.099.829	2,7	94,9	2,4
2020	253.112.221	15.885.638.550			
2021	279.206.232	16.807.332.371	2,1	94,2	3,8
2022	304.097.235	17.504.206.261	1,8	94,7	3,5

Anexo 2. Modelo Lineal: Resultados de la estimación del Modelo Lineal

Dependent Variable: PIBN Method: Least Squares Date: 11/03/24 Time: 06:31 Sample: 2006 2022 Included observations: 16				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.27E+09	7.96E+09	0.535730	0.6028
GPSE	0.014271	0.001487	9.599368	0.0000
TPE	-42223234	79722305	-0.529629	0.6069
TRP	-38851787	78867004	-0.492624	0.6320
TAE	-48031406	79426478	-0.604728	0.5576
R-squared	0.987076	Mean dependent var		2.02E+08
Adjusted R-squared	0.982377	S.D. dependent var		70764408
S.E. of regression	9394111.	Akaike info criterion		35.19937
Sum squared resid	9.71E+14	Schwarz criterion		35.44080

Log likelihood	-276.5950	Hannan-Quinn criter.	35.21173
F-statistic	210.0392	Durbin-Watson stat	1.733673
Prob(F-statistic)	0.000000		

Anexo 3. Prueba de normalidad de los residuos del Modelo Lineal



Anexo 4. Prueba de Heteroscedasticidad del Modelo Lineal: White

Heteroskedasticity Test: White				
F-statistic	1.142645	Prob. F(11,4)	0.4907	
Obs*R-squared	12.13739	Prob. Chi-Square(11)	0.3534	
Scaled explained SS	3.945750	Prob. Chi-Square(11)	0.9715	
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 11/03/24 Time: 06:33				
Sample: 2006 2022				
Included observations: 16				
Collinear test regressors dropped from specification				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.09E+18	2.23E+18	-0.488454	0.6508
GP SER^2	1.61E-05	1.95E-05	0.825302	0.4556
GP SER*TPE	-1390283.	2748653.	-0.505805	0.6396
GP SER*TRE	-1337827.	2670984.	-0.500874	0.6428
GP SER*TAE	-1345326.	2684937.	-0.501064	0.6426
GP SER	1.38E+08	2.74E+08	0.504665	0.6403
TPE^2	1.10E+14	2.24E+14	0.489832	0.6499

TPE*TRE	2.09E+14	4.30E+14	0.487351	0.6515
TPE*TAE	2.10E+14	4.35E+14	0.483655	0.6539
TRE^2	1.04E+14	2.89E+14	0.359238	0.7376
TRE*TAE	2.91E+14	5.16E+14	0.564427	0.6026
TAE^2	1.04E+14	2.60E+14	0.398898	0.7103
R-squared	0.758587	Mean dependent var	6.07E+13	

Anexo 5. Prueba de Autocorrelación Serial del Modelo Lineal: Breusch-Godfrey

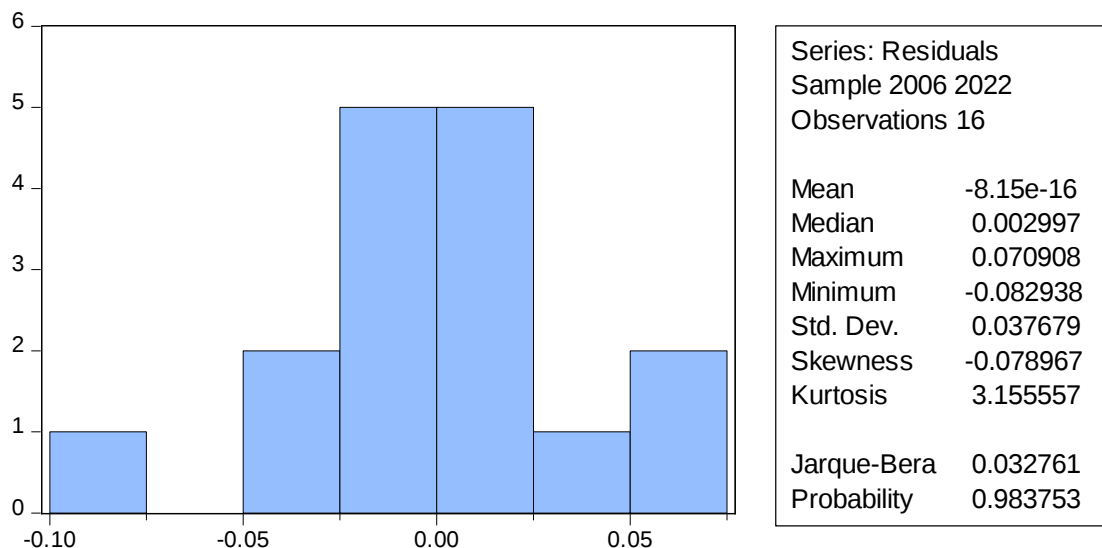
Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	0.162200	Prob. F (2,9)		0.8527
Obs*R-squared	0.556646	Prob. Chi-Square (2)		0.7571
Test Equation: Dependent Variable: RESID Method: Least Squares Date: 11/03/24 Time: 06:34 Sample: 2006 2022 Included observations: 16 Presample and interior missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.64E+09	9.22E+09	0.177730	0.8629
GPSE	0.000277	0.001702	0.162528	0.8745
TPE	-16450188	92336630	-0.178155	0.8625
TRE	-16320340	91723907	-0.177929	0.8627
TAE	-15614928	91424240	-0.170796	0.8682
RESID (-1)	0.164040	0.372552	0.440314	0.6701
RESID (-2)	-0.201333	0.525912	-0.382825	0.7107
R-squared	0.034790	Mean dependent var		8.94E-08
Adjusted R-squared	-0.608683	S.D. dependent var		8044636.
S.E. of regression	10203322	Akaike info criterion		35.41396
Sum squared resid	9.37E+14	Schwarz criterion		35.75197
Log likelihood	-276.3117	Hannan-Quinn criter.		35.43127
F-statistic	0.054067	Durbin-Watson stat		2.043967

Anexo 6. Modelo Logarítmico (2): Resultados de la estimación del Modelo Logarítmico

Dependent Variable: LOG(PIBN) Method: Least Squares Date: 11/03/24 Time: 06:43 Sample: 2006 2022 Included observations: 16				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	27.99964	19.74199	1.418279	0.1838
LOG(GPSER)	0.822134	0.097829	8.403786	0.0000
LOG(TPE)	-6.029839	4.457861	-1.352631	0.2033
LOG(TRE)	-0.176396	0.170104	-1.036989	0.3220
LOG(TAE)	-0.324941	0.177695	-1.828646	0.0947
R-squared	0.990827	Mean dependent var		19.05756
Adjusted R-squared	0.987491	S.D. dependent var		0.393399
S.E. of regression	0.043999	Akaike info criterion		-3.158978
Sum squared resid	0.021295	Schwarz criterion		-2.917544
Log likelihood	30.27182	Hannan-Quinn criter.		-3.146614
F-statistic	297.0325	Durbin-Watson stat		1.771792
Prob(F-statistic)	0.000000			

Anexo 7. Prueba de normalidad de los residuos del Modelo Logarítmico



Anexo 8. Prueba de Heteroscedasticidad del Modelo Logarítmico: White

Heteroskedasticity Test: White			
F-statistic	11.12611	Prob. F(12,3)	0.0358
Obs*R-squared	15.64839	Prob. Chi-Square(12)	0.2079
Scaled explained SS	7.971580	Prob. Chi-Square(12)	0.7873
Test Equation:			
Dependent Variable: RESID^2			
Method: Least Squares			
Date: 11/03/24 Time: 06:50			

Sample: 2006 2022				
Included observations: 16				
Collinear test regressors dropped from specification				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.154754	9.112607	0.455935	0.6794
LOG(GPSER)^2	0.007373	0.014952	0.493087	0.6558
LOG(GPSER)*LOG(TPE)	-0.086108	0.033355	-2.581587	0.0817
LOG(GPSER)*LOG(TRE)	0.005687	0.025189	0.225778	0.8359
LOG(GPSER)*LOG(TAE)	-0.014427	0.019075	-0.756360	0.5044
LOG(GPSER)	0.043755	0.708333	0.061772	0.9546
LOG(TPE)*LOG(TRE)	0.706273	0.650101	1.086404	0.3568
LOG(TPE)*LOG(TAE)	0.166508	0.534436	0.311557	0.7758
LOG(TRE)^2	-0.010707	0.029402	-0.364166	0.7399
LOG(TRE)*LOG(TAE)	0.025608	0.017256	1.483969	0.2345
LOG(TRE)	-3.377218	2.610154	-1.293877	0.2863
LOG(TAE)^2	-0.031373	0.015195	-2.064621	0.1309
LOG(TAE)	-0.418719	2.547242	-0.164381	0.8799
R-squared	0.978024	Mean dependent var		0.001331
Adjusted R-squared	0.890121	S.D. dependent var		0.002018
S.E. of regression	0.000669	Akaike info criterion		-11.83059
Sum squared resid	1.34E-06	Schwarz criterion		-11.20287
Log likelihood	107.6447	Hannan-Quinn criter.		-11.79845
F-statistic	11.12611	Durbin-Watson stat		2.304292
Prob(F-statistic)	0.035773			

Anexo 9. Prueba de Autocorrelación Serial del Modelo Logarítmico: Breusch-Godfrey

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	0.162200	Prob. F(2,9)		0.8527
Obs*R-squared	0.556646	Prob. Chi-Square(2)		0.7571
Test Equation:				
Dependent Variable: RESID				
Method: Least Squares				
Date: 11/03/24 Time: 06:53				
Sample: 2006 2022				
Included observations: 16				
Presample and interior missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.64E+09	9.22E+09	0.177730	0.8629
GPSER	0.000277	0.001702	0.162528	0.8745
TPE	-16450188	92336630	-0.178155	0.8625
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RESID (-1)	0.164040	0.372552	0.440314	0.6701
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R-squared	0.034790	Mean dependent var		8.94E-08
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S.E. of regression	10203322	Akaike info criterion		35.41396
Sum squared resid	9.37E+14	Schwarz criterion		35.75197
Log likelihood	-276.3117	Hannan-Quinn criter.		35.43127
F-statistic	0.054067	Durbin-Watson stat		2.043967
Prob(F-statistic)	0.998971			