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Fractal modeling - Ito Lemma and principle Koch in Grupo Carso, S.A.B DE C.V.

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In this article, the development of models Lagrangiano, Ito Lemma and Koch principle, applied to the company Group Carso is presented to determine the impact of, Heteroskedasticity, Homoscedasticity, Inflation and Deflation. Based on the trading matrix of the Mexican Stock Exchange (BMV) and Bank de Mexico (BANXICO) to determine the impact on the company with regard to inflation, in turn we analyzed variables we needed for the application, analyzing the variables allowed us to have a more specific vision of the gain or loss can have a company, which helps decision-making in the short and long term. It was gradually working in each of the models. When performing the calculation steps allowed us to observe the impact of each fractarial model and thus have a prediction of the inflationary impact on the company.

Grupo Carso, Heteroskedasticity Homoscedasticity, Inflation and Deflation.

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Introduction

Holding companies engaged in various areas of economic activity, which have supported the incursion into different markets, increasing this participation and importance in the Mexican Stock Exchange (BMV). Currently its corporate structure consists of several lines of business which include department stores, restaurants and cafes, pastry shops and music stores, leasing, operation and management of shopping centers, facilities, construction and infrastructure, manufacturing and services for the chemical industry and oil; infrastructure projects; civil construction and installation of pipelines, telecommunications, construction, energy, auto parts as well as having assets in mining and real estate.Operation is in national and international territory.To conclude a comparison was made between the 3 models of financial forecasting, identifying possible scenarios that each presents. Ito's Lemma is the method showing the best picture of the inflationary impact you can expect Grupo Carso.

Methodology

Taking data from the Mexican Stock Exchange (BMV) and Bank de Mexico (BANXICO), in order to perform real-time projection. It was determined using three different calculation models financial. Which provide different scenarios of profits that can be obtained by applying them correctly. A description of each. Outstanding shares-A.C 2,270,061,703, Brownian value-Bm 0.5, Golden mean-M 0.75, Minimum Price- Psw 81.56, Maximum Price-Psm 84.27, Low risk-Rb 0.33, Medium risk-Rm 0.66, High risk-Ra 0.99,Heterocedasticity-Hed 0.75, Homocedasticity-Hod 0.5 , Price-P 2.71, Salary-w 69.26,-PPP 1, Finite -∝ 1, Infinite -θ -1, Inflation-π 2.60, Deflation-Dπ 2.12 ,Interest rate-Ti 3.75,Epsilon-ε 8.16 and Limit-lim 0.618

Fractal Model

In this model applies logarithm (log) and Leperiano (ln) to smooth the data.Main formula to start developing the model with the Heteroskedasticity variable:For the application of this calculation, data are taken from the trading matrix- (Rb, Rm, Ra, P, PPP, Bn, M)

$$\text{Hed} = \left[\frac{(.33)\ell og\,\text{P} + (.66)\ell n\text{P}}{\text{P}(.99)\frac{[\text{PPP}]}{3/4}}\right]^{1/2} = \left[\frac{(.33)\ell og\,(2.71) + (.66)\ell n(2.71)}{(2.71)(.99)\frac{[80.77]}{3/4}}\right] = \left[\frac{(.33)(0.4329) + (.66)(0.9969)}{(2.6829)\frac{[8077]}{75}}\right]^{1/2} \tag{1}$$

To determine the value of Heteroskedasticity, the above formula is developed by replacing the values of the market matrix , the logarithm of P was obtained and multiplied by Rb, was high with the result of leperiano of P multiplied by Rm, subtracto P multiplied by PPP divided by M. The result is levo Bn.

$$\text{Hed} = \left[\frac{0.1428 + 0.6579}{288.9304}\right]^{1/2} = 0.0526 \tag{2}$$

The result is multiplied by 100, to find a range of 0.5 to 1, because the result is presented in scientific notation.Homoscedasticity: Main formula to start developing the model with the Homoscedasticity variable: (Rb, Rm, Ra, P, α, θ, Ac , Bn, w, M)

$$\text{Hod} = \frac{\left[\ell og\frac{\text{P}(.33)}{\text{P}(.66)}\right]^{1/2} + \left[\ell n\frac{\text{P}(.99)}{\alpha+1}\right]^{3/4}}{\frac{\theta+\text{Ac}}{\ell n\,\text{w}}} = \frac{\left[\ell og\frac{(2.71)(.33)}{(2.71)(.66)}\right]^{1/2} + \left[\ell n\frac{(2.71)\,(.99)}{1+1}\right]^{3/4}}{\frac{-1+9.3560}{\ell n\,(69.26)}} \tag{3}$$

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To determine the value of Homoscedasticity, the above formula is developed by replacing values.

Logarithm was applied to Shares Outstanding (AC) to reduce its value and get the result successfully.

$$\text{Hod} = \frac{[\ell og\,(0.5)]^{1/2}+[\ell n\,(1.3414)]^{3/4}}{\frac{-1+9.3560}{4.2378}} = \frac{(0.5486+0.3989)}{\frac{8.356}{4.2378}} = 0.4805 \quad (4)$$

The result of applying logarithm is taken as an absolute value, because the logarithms can never be negative.Inflation: Main formula to start developing the model with the inflation variable: (T.C, π, T.i, Bn, ξ)

$$\pi = \left[\frac{(\ell og\,\text{T.C}^{(\pi-1)})(\ell n\,\text{T}i^{(\pi+1)})}{\xi^2}\right]^{1/2} = \left[\frac{(\ell og\,(17.43)^{(2.60-1)})(\ell n\,(3.75)^{(2.60+1)})}{(8.16)^2}\right]^{1/2} \quad (5)$$

To obtain the value of inflation, the above formula is developed by replacing values.

$$\pi = \left[\frac{(1.2429)^{1.60})(1.3217)^{3.60})}{66.5856}\right]^{1/2} = \left[\frac{(1.4161)(2.7294)}{66.5856}\right]^{1/2} = 0.2409 \quad (6)$$

Deflation: Main formula to start developing the model with the Deflation variable: (P, PPP, Psm, Psw, π, T. C, Bn)

$$\text{D}\pi = \left[\frac{\ell og\,\text{P}-\ell n\,\text{PPP}}{\frac{\frac{(\text{Psm}+\text{Psw})}{\pi}}{1/2}}\right]^{\text{T.C}} = \left[\frac{\ell og\,(2.71)-\ell n\,(80.77)}{\frac{\frac{(84.27+81.56)}{2.60}}{1/2}}\right]^{17.43} \left[\frac{0.4329-4.3916}{\frac{165.83}{5.2}}\right]^{17.43} \quad (7)$$

To determine the value of deflation, the above formula is developed by replacing values.
The result obtained from the numerator was taken as an absolute value.

$$\text{D}\pi = \left[\frac{3.9587}{31.8903}\right]^{17.43} = 0.0160 \quad (8)$$

Model Motto ITO, we take as a basis the main formulas Model Lagrangiano. And we apply the basic rules of Lemma model Ito.Limit logarithm becomes: $\ell og = \ell im$ Leperiano differential becomes: $n = \frac{d}{d_{I_{\overrightarrow{0.5}}}} + \frac{d}{d_{II_{\overrightarrow{1}}}} + \frac{d}{d_{III_{\overrightarrow{1.5}}}} + \frac{d}{d_{IV_{\overrightarrow{2}}}}$
Heteroskedasticity: Main formula to start developing the model with the Heteroskedasticity variable, applying the rule Motto ITO.

$$Hed = \left[\frac{(.33)\,lim\,P+(.66)\frac{d}{d_I}P}{\frac{P(.99)[PPP]}{3/4}}\right]^{1/2} = \left[\frac{(.33)\,(0.618)(2.71)+(.66)(0.5)(2.71)}{(2.71)(.99)\left[\frac{80.77}{3/4}\right]}\right]^{1/2} \quad (9)$$

Substituting the values for Heteroskedasticity:

$$Hed = \left[\frac{0.5526+0.8993}{(2.6829)\,(107.6933)}\right]^{1/2} = \left[\frac{1.4469}{288.9303}\right]^{1/2} = 0.0707 \quad (10)$$

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Homoscedasticity: Main formula for the value of the Homoscedasticity variable:

$$Hod = \frac{\left[lim\frac{P.33}{P.66}\right]^{1/2}+\left[\frac{d}{d_I}\frac{P.99}{\alpha+1}\right]^{3/4}}{\frac{\theta+AC}{\frac{d}{d_I}w}} =$$

$$\frac{\left[(.618)\frac{(2.71)(.33)}{(2.71)(.66)}\right]^{1/2}+\left[(.5)\frac{(2.71)(.99)}{1+1}\right]^{3/4}}{\frac{-1+(9.3560)}{(.5)(69.26)}} \quad (11)$$

Substituting the values:

$$Hod = \frac{[(.618)(.5)+(.5)(1.3414)]^{3/4}}{\frac{8.356}{34.63}} =$$

$$\frac{[0.309+0.6707]^{3/4}}{-2412} = 4.0826 \quad (12)$$

Inflation: To obtain the value of inflation the following formula is applied:

$$\pi = \left[\frac{(lim\,T.C^{\,\pi-1})\left(\frac{d}{d_I}T\imath^{\pi+1}\right)}{\xi^2}\right]^{1/2} =$$

$$\left[\frac{(6.18)(17.43)^{(2.60-1)}(.5)(3.75)^{(2.60+1)}}{(8.16)^2}\right]^{1/2} \quad (13)$$

$$\pi = \left[\frac{(10.7717)^{(1.60)}(1.875)^{(3.60)}}{66.5856}\right]^{1/2} =$$

$$\left[\frac{(44.8388)(9.6117)}{66.5856}\right]^{1/2} = \left[\frac{(430.9770)}{66.5856}\right]^{1/2} = 2.5441 \quad (14)$$

Deflation: Main formula for the value of the Deflation variable.

$$D\pi = \left[\frac{lim\,P-\frac{d}{d_I}PPP}{\frac{(Psm+pSW)}{\frac{\pi}{1/2}}}\right]^{T.C} =$$

$$\left[\frac{(.618)(2.71)-(.5)(80.77)}{\frac{(84.27+81.56)}{\frac{2.60}{1/2}}}\right]^{17.43} =$$

$$\left[\frac{(1.6717)-(40.385)}{\frac{165.83}{5.2}}\right]^{17.43} \quad (15)$$

$$D\pi = \left[\frac{38.7133}{31.8903}\right]^{17.43} = 0.0160$$

Model Principle KOCH .We rely on the model Langrageano to the principle of Koch develop everything Brownian logaritmiado is passed, everything is passed Leperiano Media Dorada. Brownian passed all part of one whole Golden Mean passed part two.

$$\ell og = 1/2, \ell n = 3/4 = 0.75\,\frac{\partial}{d_{II}} =$$

$$\frac{\partial_I}{0.75}+\frac{\partial_{II}}{0.25}+\frac{\partial_{III}}{0.75} \quad (16)$$

Heteroskedasticity : To obtain the value of Heteroskedasticity the following formula is applied the logarithm to Brownian replacement, Leperiano to golden mean Brownian part one and part two Golden Mean.

$$Hed = \left[\frac{(.33)^1/_2P+(.66)^3/_4P}{P(.99)\frac{(PPP)}{0.75}}\right]^{.25} =$$

$$\left[\frac{(.33)^1/_2(2.71)+(.66)^3/_4(2.71)}{(2.71)(.99)\frac{(80.77)}{0.75}}\right]^{.25} = \left[\frac{0.4471+1.3414}{(2.6829)(107.6933)}\right]^{.25} =$$

$$\left[\frac{1.7885}{288.9303}\right]^{.25} = 0.2804 \quad (17)$$

Homoscedasticity: Main formula to start developing the model with the Homoscedasticity variable:

$$Hod = \frac{\left[1/_2\frac{P.33}{P.66}\right]^{.25}+\left[3/_4\frac{P.99}{\alpha+1}\right]^{0.75}}{\frac{\theta+A.C}{3/_4W}} =$$

$$\frac{\left[1/_2\frac{(2.71)(.33)}{(2.71)(.66)}\right]^{.25}+\left[3/_4\frac{(2.71)(.99)}{1+1}\right]^{0.75}}{\frac{-1+9.3560}{3/_4(69.26)}} \quad (18)$$

$$\text{Hod} = \frac{[1/_2(.5)]^{.25}+[3/_4(1.3414)]^{0.75}}{\frac{8.356}{51.945}} = \frac{[.25]^{.25}+[1.0060]^{0.75}}{.1608} =$$

$$\frac{(.7071+1.0044)}{.1608} = 10.6436 \quad (19)$$

Inflation.This calculation as above is obtained through the following formula:

$$\pi = \left[\frac{\left(\frac{1}{2}\,\text{T.C}\right)^{\pi-1}\left(\frac{3}{4}\,\text{T.}\imath\right)^{\pi+1}}{\xi^2}\right]^{0.25} =$$

$$\left[\frac{\left(\frac{1}{2}(17.43)\right)^{2.60-1}\left(\frac{3}{4}(3.75)\right)^{2.60+1}}{(8.16)^2}\right]^{0.25} \quad (20)$$

Substituting values and applying Brownian, golden mean, part one and part two:

$$\pi = \left[\frac{(8.715)^{1.60}(2.8125)^{3.60}}{66.5856}\right]^{0.25} = \left[\frac{(31.9468)(41.3745)}{66.5856}\right]^{0.25} =$$

$$\left[\frac{1321.7828}{66.5856}\right]^{0.25} = 2.1107 \quad (21)$$

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Deflation.Main formula to start developing the model with the Deflation variable:

$$D\pi = \left[\frac{\frac{1}{2}\,P - \frac{3}{4}\,PPP}{\frac{Psm+Psw}{\frac{\pi}{0.25}}}\right]^{T.C} =$$

$$\left[\frac{\frac{1}{2}\,(2.71) - \frac{3}{4}\,(80.77)}{\frac{84.27+81.56}{\frac{2.60}{0.25}}}\right]^{17.43} =$$

$$\left[\frac{(1.355)-(60.5775)}{\frac{165.83}{10.4}}\right]^{17.43} =$$

$$\left[\frac{59.2225}{15.9451}\right]^{17.43} 8.5634920555\ \ell og\ 10.9326 \qquad (22)$$

Logarithm was applied to the result because it was very large compared to the results of the above variables.

Conclusions

One such important problem is Heisenberg's uncertainty and its inter- pretations and implications. There are precise mathematical formulas, and there are their interpretations. These interpretations do not follow from the so successful mathematical machinery - they are imposed on top of it with questionable philosophical underpinnings , to quantum fractals targets that question: can we expand the formalism so as to describe the processes not yet described and predict what has not been predicted so far? When performing the three models proposed for the company Group Carso, it is concluded that there is a greater inflationary impact in Lemma ITO and there performance in the company.

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