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Presentación

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En este número es presentado el artículo *Fractal complexity of the Financial Aeromexico por* LOMELI, América, como segundo *artículo Fractal modeling in the international financial leverage* por RAMOS-ESCAMILLA, Maria, GOMEZ, Anne, SANCHEZ, Carlos, TABOADA, Armando, como tercer articulo *Financing Fractal in the IT sector: Case America Movil* por ARROYO, Alejandro, como cuarto articulo está *Fractal modeling by "El Puerto de Liverpool", S.A.B. de C.V.* por AGUILAR-CALLETANO, Carlos.

Contenido

Artículo **Revista de Planeación y Control Microfinanciero**
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Fractal complexity of the Financial Aeromexico

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Abstract

Analyzing investment risks, gives us a more accurate picture of the profit that can be obtained for a specific customer, considering the data displayed on the Mexican stock exchange, through the trading matrix. Its importance lies in the certainty of the actual gain can be obtained and which helps decision-making in future investments.

Fractal, Financial, Aeromexico

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† Investigador contribuyendo como primer autor.

Artículo **Revista de Planeación y Control Microfinanciero**
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Introduction

Analyzing investment risks, gives us a more accurate picture of the profit that can be obtained for a specific customer, considering the data displayed on the Mexican stock exchange, through the trading matrix. Its importance lies in the certainty of the actual gain can be obtained and which helps decision-making in future investments.

Analyzing investment risks, gives us a more accurate picture of the profit that can be obtained for a specific customer, considering the data displayed on the Mexican stock exchange, through the trading matrix. Its importance lies in the certainty of the actual gain can be obtained and which helps decision-making in future investments, so you can do the comparative relationship and obtain successful results. It is a highly personalized work, which guarantees applicable to Aeroméxico numbers. Regularmentre companies seek safety in their activities, taking decisions with firm foundations which provide them satisfactory results, but above all to provide them with certainty.

Methodology

Taking as a basis the stock market crash of February matrix was determined using six different mathematical models of calculation. Which provide different scenarios for gains that can be obtained by applying them correctly. Below detail each.

For each of the scenarios developed in this article data from the trading matrix of February are taken the main formula for the application of this method is as follows:

$$\frac{\left\{\left[\frac{\lim PUT+\lim CALL}{(\int x^{PUT})(\int y^{CALL})}\right]^{\ln\frac{PAc}{AC}}\right\}+ \left\{\left(\frac{\log PUT}{logCALL}\right)^{AC}+\left(\frac{PAc}{AC}\right)^{PUT-CALL}\right]}{z}$$

$$3\ \left(\frac{4}{3}\right)^{n} L_0 \lim_{n\to\infty} 3\left(\frac{4}{3}\right)^{n} L_0 = \infty$$

For iteration Ex Ante:

$$A_1 = \frac{\sqrt{3}}{4} l_0^2 + 3\frac{\sqrt{3}}{4}\left(\frac{l_0}{3}\right)^2$$

For iteration Ex Post:

$$A_2 = \frac{\sqrt{3}}{4} l_0^2 + 3\frac{\sqrt{3}}{4}\left(\frac{l_0}{3}\right)^2 + 3\cdot 4\ \frac{\sqrt{3}}{4}\left(\frac{l_0}{3^2}\right)^2$$

In combined operation:

$$A_{n=}\frac{\sqrt{3}}{4} l_0^2 + \sum_{k+1}^{n} 3\cdot 4^{k-1}\frac{\sqrt{3}}{4}\left(\frac{l_0}{3^k}\right)^2$$

$$= \frac{\sqrt{3}}{4} l_0^2 \left[1+\frac{3}{4}\sum_{k=1}^{n}\left(\frac{4}{3^2}\right)^k\right]$$

$$= \frac{\sqrt{3}}{4} l_0^2 \left[1+\frac{1}{3}\sum_{k=0}^{n-1}\left(\frac{4}{3^2}\right)^k\right]$$

$$A_\infty = \frac{8}{5}\frac{\sqrt{3}}{4} l_0^2 = \frac{8}{5}A_0$$

To perform the operation partition must have the detail of the following items:

∫=2.13 Inflation
x=3.36 Cetes
y=3.25 Object rate
z=13.39 Canadian dollar price

Develops the above formula substituting the values of the trading matrix of February 2016. If the result logarithm is applied to smooth the data.

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$$D = \lim_{n\to\infty} -\frac{\log(3\cdot 4^n)}{\log 3^{-n}} = \lim_{n\to\infty} \frac{\log 3 + n\log 4}{n\cdot \log 3} = \frac{\log 4}{\log 3} = 1{,}26186$$

$D_A = u_{1,A} - U_{2,A}$

$P_i \equiv u_{i(2)-U_{I(0)}} P_1 - P_2$(U-i)/I

Developing the equivalent integral whole, we get:

$$\left\{\left[\frac{3.46+4.61}{\left(\int (2.13)^{3.46}\right)\left(\int (2.13)^{4.61}\right)}\right]^{\ln\frac{4.00}{0.1}}\right\} + \frac{\left\{\left(\frac{3.46}{4.61}\right)^{AC} + \left(\frac{4.00}{0.1}\right)^{3.46-4.61}\right]}{13.39}$$

$$\left\{\left[\frac{8.07}{\left(\int 13.68\right)\left(\int 32.64\right)}\right]^{\ln 40}\right\} + \frac{\{(.75)^{8.85} + (40)^{1.15}]}{13.39}\left\{\left[\frac{8.07}{\left(\int 13.68\right)\left(\int 32.64\right)}\right]^{\ln 40}\right\} + \frac{\{0.07+69.56]}{13.39}$$

$$\left\{\left[\frac{8.07}{\left(\int 446.92\right)}\right]^{3.68}\right\} + 5.26\left\{\left[\frac{8.07}{\left(\int 446.92\right)}\right]^{3.81}\right\}\{[0.01]^{3.81}\} = 2.39$$

Iterating the system:

$$\left(\frac{sen\,3.46 + cos\,3.46}{(3.46-3.36)^{2.13}} + \frac{sen\,4.61 + cos\,4.61}{(4.61-3.25)^{2.13}}\right)^{ln\left(\frac{4.00}{0.1}\right)} + \frac{(3.46/4.61)^{8.85} + (4.00)^{3.46-4.61}}{13.39} =$$

$$\left(\frac{0.31+0.94)}{(0.1)^{2.13}} + \frac{0.99+0.10}{(1.36)^{2.13}}\right)^{ln(40)} + \frac{(.75)^{8.85} + (4.00)^{1.15}}{13.39} =$$

$$\left(\frac{1.25)}{.007} + \frac{1.09}{1.92}\right)^{3.68} + \frac{0.07+4.92}{13.39}$$

$(178.57 + 0.56)^{3.68} + 0.37$
$(179.13)^{4.05}$ = 1334540383 → ln 21.01 = log .12

The result for the first scenario is .12, in this case the F2 fractal and finance tool to obtain data that allowed us to determine the values of Exante (Down / Base) and ExPost (Up / Base) is used. On the trading data matrix maximum (a), Minumum (b) and Range (c) in the tool, which are captured in the fields of values for the Upward Trend and Downward Trend are obtained.

$$dx/dt = s(y - xy + x - qx^2)\ 1/(1 + x^{*^2}) \begin{vmatrix} 3x^{*^2} - 5 & -4x^* \\ 2bx^{*^2} & -bx^* \end{vmatrix}$$

$$dy/dt = 1/s\,(-y - xy + vz)\ w(x - z)\ b - ay - x^2y\ bx(1 - y/(1 + x^2)$$

$$dx/dt = -x + ay + x^2y\ a - x - 4xy/(1 + x^2)$$

When applying the calculation tool shows the results of 200%, 100% and 50%, which are added together and divided by 3 gives us as a result the EXANTE (Down / Base) and ExPost (Up / Base).

ExAnte (Down/Base)		
%	Regression	Extension
200	1	37.63
100	39.47	38.99
50	39.89	1

Table 1 ExAnte (Down/Base) Fibonacci Aeromexico

$S(a) = \sum a^2$ +a$\lfloor I(x+1, y) - I(xy)\rfloor$+∑a $\lfloor I(x, y+1) - I(x, y)\rfloor < flg >:=$
$\int f\,(x)g(x)dm\Omega$(x)>

$P_{sa} = D_{sa,1} - D_{sa,2}$

Optimizando con operadores , nnx:

$i^{12nnx}: n = 0,1,2,3$

$$\frac{37.63 + 36.95 + 1}{3} = 25.19$$
$$\frac{1 + 39.63 + 39.89}{3} = 26.84$$

$$€ \rightarrow \frac{1}{i^{i-€x.x}} f(x)dx, € \; L^2(\Omega) \; F\mu f: \lambda \rightarrow \int_x^{-2\lambda} \lambda \rightarrow f(xld\, m\lambda)$$

	ExPost (Up/Base)	
	Regression	Extension
200	1	39.67
100	39.47	36.95
50	39.81	1

Table 2 ExPost (Up/Base) Fibonacci Aeromexico

$$\frac{1 + 39.47 + 39.81}{3} = 26.76$$
$$\frac{39.67 + 36.95 + 1}{3} = 25.87$$

Then both results are added, divided by two and is applied to smooth the data log. It develops so on until the value of .54

$$\int lfx^2 \; d\mu\,(x) = \int I(F\,\mu_{f})(\,\lambda)I^2 \; d\upsilon(\,\lambda)$$

$$A,B C\mathbb{R}^d. If -{}_\chi Af\|\mu \leq € \;\|Ff -{}_\chi BFf\|\mu \leq \delta, (1-\varepsilon-\delta)^2 \leq \mu(A)v(B)$$

$$\frac{(2.54+4.54)}{2} = 3.54 = \log .54$$

The Stock Market tool used in this exercise is fueled by the values Maximum Price, Minimum Price, Maximum Price Ranges, Circulation Volume Log, Log Broadcasters Stock Market, Share Market and Minimum Price Range Log.

As in previous cases they are based on the trading matrix.5 large totals are added together and then divided among the 50 originally resulting operations. The end result is large so 2 times the logarithm is applied to soften the final data .99

$$L = X_r := \left\{ \sum_{x=0}^{n} R^{*k} l_k € \; L \right\} \mu = N^{-1} \sum_{b€\,B} \mu \; o\sigma^{-1}_{b}$$

$$\frac{7852.51 + 6196.47 + 3559.18 + 588.92 + 372.66}{50} = 18204.52 = \log 9.80 = \log .99$$

This calculation as above is obtained through a tool named Pivot Calculator, similarly to the above cases the data are taken from the trading matrix. Maximum, minimum, closure and opening are the values that are placed to obtain the desired results. There are two concepts that are handled are the resistance (4) and the support (4), these are derived harmonic, Brownian, recursive and fractals. To select which concept is taken to make the prediction should be considered that both contain results in the 4 variables mentioned above.

	Armonico	Brownian	Recursive	Fractal
Resistance	40.25	40.30	40.08	40.05
Support	39.57	39.62	39.89	39.37
Total	79.82	79.92	79.97	79.42

Table 4 Pivot Aeromexico

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Continues summing two values (resistance and support), for a total of 4 fields, is added and finally divided by 4. smoothing values is performed until the minimum 0.27.

$$X_P := \left\{ \sum_{k=0}^{\infty} R^{*-k} l_k : l_k \in L \right\}$$
$$2\pi \, \mathrm{d(B)} \max_{\substack{b,b'\in B \\ l\in L}} \| \sin(2\pi(b-b')(.-l) \|\infty$$

$$\frac{(79.82 + 79.92 + 79.97 + 79.42)}{4} = 79.78$$
$$= 1.90 = \log .27$$

The method to obtain the result of Carnot is made by applying the following formula:

$$L_r := \left\{ \sum_{k=0}^{n} (r\, R^{*})\, l_k : n \in \mathbb{m} l_k \in L \qquad N^{-1} \sum \mathrm{b} \in \right.$$
$$\beta \mu_r \circ \alpha, b(x) := (r\, R)^{-1}\, x + b$$

$$GISF = \frac{(\mathrm{PUT} + \mathrm{CALL})^{\frac{1}{2}}}{\left(\frac{\mathrm{VCALL} - \mathrm{VPOST}}{2}\right)^{\frac{3}{4}}}$$

$$\mathrm{GISF} = \frac{(39.96 + 39.96)^{\frac{1}{2}}}{\left(\frac{2.9 - 3.94}{2}\right)^{\frac{3}{4}}} = \frac{8.93}{0.61}$$
$$= 14.63 \rightarrow \ln 2.68$$

Cycle in Carnor the maximum and minimum of the trading matrix is placed as well as the call and put the same source and the value of GIS'F that is the result of the application of the formula indicated start.With the values resulting from the calculation of the tool, they field C and D. fill amounts volume and high power GIFS to PUT are performed. MaxExPos later, the MaxExAnte, MinExPost and MinExAnte is calculated. final results are subtracted, divided between 2 and is smoothed to reach number 00.

Volumen	GIFS
C=41.17	2.55
D=40.99	2.56
A=CALL	39.96
B=PUT	39.96

Table 5 Carnot Cycle Aeromexico

$$\mathrm{f(x)} = \sum \lambda \in L < e\lambda | f > \mu_z^{\lambda}$$
$$m(\Delta \cap \Omega), v(\Delta) := \sum_{k=0}^{\alpha} = o\mu 0(\Delta + k)$$

$$\frac{H = In(b_y)}{In(b_x)}$$

$$(41.17 + 2.55)^{2.66} = 23131.78$$
$$(40.99 + 2.56)^{2.66} = 22893.30$$

Fractal analysis is the latest method used in this exercise; in this case 169 calculation variables on the values of the following fields are present: maximun Price, minimun Price, maximun Price range, stock market broadcasters logs, share market log and Minimum Price range.

The results are divided into four quadrants,these are summed and the result following ranges:

Fractal Matrix	
N->	5.74
E->	4.26
S->	1.00
O->	1.26

Table 6 Quadrants Fractal

The following formula applies formulated by replacing the values with the results obtained in each quadrant. The log is again applied to soften the amount obtained as a result .35.

$$f(x,r) = \alpha^{f^2}(x/\alpha, R_1)\alpha^n f^{2n}(x/\alpha^n ; R_n)\alpha^n f^{2n}(x/\alpha^n , R_{n+1}) = \alpha g^2(x/\alpha)$$

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$$\frac{[1(N)+(90(E)]^{\frac{3}{4}}}{[(80(S))-(270(O))]^{\frac{1}{2}}} = \frac{[1(5.74)+(90(4.26))]^{\frac{3}{4}}}{[(80(1.00))-(270(1.26))]^{\frac{1}{2}}} = 6.18*4$$
$$= 24.73 = (\log 24.73) = 1.39$$

$$\frac{(5.74+340.2)^{\frac{3}{4}}}{[(80)-(340.2\ )]^{\frac{1}{2}}}\frac{291.85}{130.1} = 2.24 = \log .35$$

Finally we get the levels of risk for stochastic modeling of financial market:

$$.99\ \frac{log.54}{ln.99} = \frac{0.26+0.01}{2} = \frac{0.13*100}{100} = 0.13\%$$
$$.66 \rightarrow \frac{log.27}{ln.35} = \frac{0.56+1.04}{2} = \frac{0.8*100}{100} = 0.8\%$$
$$.33\ \frac{log.12}{\ln.00} = \frac{-0.92+0}{2} = \frac{-0.46*100}{100} = -0.46\%$$

Results

The result obtained from the application of the 6 methods mentioned above is as follows: Fibonacci .54, Miller.12, Pivot.27, Stock.99, Carnot .00 and Fractal .35, each shows the smoothed values, because the overall result that was obtained was extensive.

Conclusions

In making the 6 methods proposed for the company AeroMexico is concluded that the high investment risk shows Fibonacci models and Stock; Pivot, Fractal way while Carnot and Miller are at low risk. Thus it is determined that the calculated profit margin is 0.13%, using fractal methodology.

References

Burkle-Elizondo, G., Sala, N., & Valdez-Cepeda, R. D. (2015). Geometric and complex analyses of Maya architecture: some examples. In Architecture and Mathematics from Antiquity to the Future (pp. 113-125). Springer International Publishing.

Cabrera, A. (2015). Financial Engineering case study: Alcatel-Lucent, SA Mexican Capital Market (BMV). In Tópicos Selectos de Economía: Volumen III (pp. 165-181). ECORFAN.

Díaz, A. F. (2015). Chaos and Fractal Impact on Economics. Documentos de trabajo de la Facultad de Ciencias Económicas y Empresariales, (2), 1-34.

Díaz, A. F. (2015). Chaos and Fractal Impact on Economics [El impacto en la ciencia económica de la teoría del caos y de los fractales: Teoría y aplicaciones] (No. 15-02). Universidad Complutense de Madrid, Facultad de Ciencias Económicas y Empresariales.

Enriquez, J. I. G., Al Rey Villagracia, R. R., & Culaba, A. B. (2015). A dynamic Leontief model with stochastic extensions for sustainable Jatropha curcas biofuel supply chain.

Escamilla, M. R. (2013). Frontera estocástica del I+ D con cotas fractales para la innovación tecnológica. Economía Informa, 2013(382), 55-75.

Escamilla, M. R., & García, M. M. (2015). Tópicos Selectos de Economía: Volumen III.
Escamilla, M. R., & Méndez, R. L. (2015). Modelación fractal de las fuentes de financiamiento en México. Investigación: cultura, ciencia y tecnología, (14), 35-39.

ISSN-2444-5037

Escamilla, M. R., & Torrado, F. M. (2012). Tecnología fractal aplicada a los precios del consumidor racional. Investigación: cultura, ciencia y tecnología, (8), 32-37.

Escamilla, M. R., & Torrado, F. M. (2013). Tecnología de innovación fractal en el sector agrícola europeo. Investigación: cultura, ciencia y tecnología, (9), 26-31.

Escamilla, M. R., & Vargas, O. R. (2013). GIS'F FRACTAL ANALYSIS WITH PIVOTING GRAPHIC. Rect@, (4), 209.

Escamilla, M. R., Vargas, M. J. S., & García, M. M. (2013). ITERACIÓN FRACTAL DE COMPUTO IFS EN LOS MERCADOS FINANCIEROS. Rect@, (4), 223.

Felix, R., & Hinck, W. (2016). Attention to Print Advertising: An Eye Tracking Study in the Context of Airline Advertisements. In Thriving in a New World Economy (pp. 252-255). Springer International Publishing.

Ferreiro, J. C., Macedo, J. M., & Jiménez, R. A. G. (2015). Factores que Inhiben el Crecimiento del Mercado de Capitales en la Bolsa Mexicana de Valores (BMV). Revista de la Facultad de Contaduría y Ciencias Administrativas, 1(1), 211-229.

Frausto, J., Álvarez, E., Sánchez, J., Limonchi, P., & Lebrun, J. (2015). Análisis de Portafolios de Inversión para la Bolsa Mexicana de Valores. InTópicos Selectos de Economía: Volumen III (pp. 1-15). ECORFAN.

García, M. M., Escamilla, M. R., Vargas, M. J., Vargas, Ó., & García, L. (2013). Modelación fractal de los precios en el sector eléctrico de España vs. Galicia. Enlaces: revista del CES Felipe II, (15), 4.

Leibold, A. O. S., López, Y. A., & Flores, M. (2016). Low Cost Carriers in Mexico. The Low Cost Carrier Worldwide, 97.

López, A. (2015). Análisis de América Movil. In Tópicos Selectos de Economía: Volumen III (pp. 76-96). ECORFAN.

López, A. (2015). Análisis de América Movil. In Tópicos Selectos de Economía: Volumen III (pp. 76-96). ECORFAN.

Ramírez, R. P., & Escamilla, M. R. (2015). La retracción del Estado ante las nuevas tendencias del mercado global. Investigación: cultura, ciencia y tecnología, (13), 52-57.

Ramos Escamilla, M. (2013). Mapeo fractal con IFS de precios bursátiles. ISO 690

RAMOS ESCAMILLA, M. D. J. (2013). DINAMICA ECONOMICO FINANCIERA ACTUAL (Doctoral dissertation).

Ramos, G. (2015). Análisis financiera Axtel. In Tópicos Selectos de Economía: Volumen III (pp. 45-56). ECORFAN.

Ramos-Escamilla, M. (2015). Stochastic Frontier I & D of fractal dimensions for technological innovation. arXiv preprint arXiv:1509.01212.

Schmitt, D., & Gollnick, V. (2016). Challenges and Competition of Air Transport. In Air Transport System (pp. 347-377). Springer Vienna.

Soto, P. F. S. (2010). Ciencias de la Tecnologia de Información: Handbook T-1.

Torrado, F. M., & Escamilla, M. R. (2012). Concatenación fractal aplicada a la interpolación de los precios en la Bolsa de Valores de Londres. Ecorfan Journal, 3(6), 48-77.

Xiao, G., & Gong, J. (2015). Construction and optimization of a quantum analog of the Carnot cycle. Physical Review E, 92(1), 012118.

Fractal modeling in the international financial leverage

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Abstract

In this articule we shows the financial situation of the Mexican company "Grupo Herdez" wich specializes in food is a leader in it, markets which it is focused and their participation in the Mexican Stock Exchange. The development of prediction methods for Marketing and Fractal applied to determine the investment risk.

Obtaining information from the Mexican Stock Exchange; and analyzing their stability, history, investment and determine if the company generates a leverage or financing. Using economic modeling, we managed to analyze the economic situation of the "Grupo Herdez" and their stability in the stock market.

Finances, Fractal, Economics, Leverage, Financing Mexican Stock Exchange, Grupo Herdez, Inflation, Finito, Modeling

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† Investigador contribuyendo como primer autor.

Introduction

We realize a study to announce the feasibility and the performance that some investor could have to this company about what are the risks or benefits in Group Herdez. With the following models we will represent the reliability of the group in the stock exchange area and to guarantee a good decision. We considered data from the Mexican Stock Exchange, the National Institute of Statistics and Geography and Banco de Mexico to implement the variables within two mathematical financial models, (Leverage & Financing). To better understand what we are talking about, we share an example. The number of customers of a beach restaurant varies based on the season, the weather, the adquistivo power of customers at that time, the same restaurant service, etc. So, we do not really know what will be the exact number of clients, but we can have an approximate. The same happens with companies, the market is evolving, vary the exchange rates, inflation, purchasing power, innovations, and many factors which could change from one day to another, but based on historical data can generate certain number to give us a vision of the environment of the company.

About how risky it can be to apply for funding at this moment for the company HERDEZ of Mexico.The apalacamiento is which will give us an approximate view that there is much risk, to take firm decisions.

Grupo Herdez is a leading processed food sector and in the segment of frozen yogurt company in Mexico and one of the leaders in the category of Mexican food in the United States. The Company is engaged in a wide range of categories, including organic foods.

The stock market of April matrix was determined using the method of financing and leverage respectively. For this exercise we will apply different models based on the formula of leverage and financing. To make the financing operation should have the detail of the following items, the lagrangian model allows us to reduce a very large number of small.

Finito set:

$$\text{All that is } \log = \lim = 0.618 = \frac{\mathrm{d}}{\mathrm{d}1} = 0.5 = \frac{\partial}{\partial 1} = .75$$

The Model of Koch:

$$\log = \frac{1}{2}\ln = \frac{3}{4}\frac{3}{4} = 0.75 \text{ Antilog} = \frac{1}{2}\frac{\partial}{\partial \mathrm{i}} + \frac{3}{4}\frac{\partial}{\partial \mathrm{ii}}$$

These three models should have the same variables applied differently but in the end the three will give us an approximate number of risks. We will take actual data of the company HERDEZ of Mexico, which is listed on the Mexican Stock Exchange, the leverage variable has as basis the following the formula

$$A = \left[\frac{\log[\mathrm{TCf} + \mathrm{TCft}]}{\ln[\mathrm{Tcx}]}\right]^{\frac{\mathrm{TC}-\pi}{\frac{1}{2}}}$$

Where:
A = Leverage
TCf = Fixed exchange rate
TCf = type fluctuane change
TCx = flexible exchange rate
TC = Exchange
π = Inflation
1/2 = Brownian

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Applying values to the original formula, one of the key features of the multifractals remains little known. Using the author's recent work, introduced for the first time in this chapter, the exposition can be unusually brief and mathematically elementary, yet covering all the key features of multifractality. It is restricted to very special but powerful cases: i) the Bernoulli binomial measure, which is classical but presented in a little-known fash- ion, and ii) a new two-valued "canonical" measure.

$$A=\left[\frac{\log[TCf+TCft]}{\ln[Tcx]}\right]^{\frac{TC-\pi}{\frac{1}{2}}}$$
$$=\left[\frac{\log[17.55+20.31]}{\ln[14.79]}\right]^{\frac{17.55-2.76}{0.5}}$$
$$=\left[\frac{\log[37.86]}{\ln[14.79]}\right]^{\frac{14.79}{0.5}}=\left[\frac{1.578}{2.693}\right]^{\frac{14.79}{0.5}}=(1.36)$$

We keep this result and today we do the exercise with the multifractal model advanced extends scale invariance to allow for dependence. Readily controllable parameters generate tails that are as heavy as desired and can be made to follow a power-law with an exponent in the range $1 < \alpha < \infty$. Remembering what this model tells us, the formula would be the next:

$$FA=\left[\frac{\log[\text{Antilog}(TCf+TCft)]}{\ln[Tcx]}\right]^{\frac{TC-\pi}{\frac{1}{2}}}$$

Apply the same values to the formula:

$$A=\left[\frac{\log[\log(\log((17.55+20.31))]}{\ln[14.79]}\right]^{\frac{17.55-2.76}{0.5}}=$$
$$\left[\frac{\log[\log(\log((37.86))]}{\ln[14.79]}\right]^{\frac{17.55-2.76}{0.5}}=$$
$$\left[\frac{\log[\log(1.57)]}{2.69}\right]^{\frac{14.79}{0.5}}=\left[\frac{\log[0.19]}{2.69}\right]^{\frac{14.79}{0.5}}=$$
$$\left[\frac{-0.70}{2.69}\right]^{\frac{14.79}{0.5}}=(-2.254)$$

Recalling all along, search for a model was inspired by a finding rooted in economics outside of finance. Indeed, the distribution of personal incomes the following formula is obtained based on the model Lagrangian.

$$A=\left[\frac{\lim[\partial(TCf+TCft)]}{\frac{d}{dI}[Tcx]}\right]^{\frac{TC-\pi}{\frac{1}{2}}}$$

Apply the same values to the formula of this principle has provided the basis of models or scenarios that can be called good because they satisfy all the following properties: i) they closely model reality,ii)they are exceptionally parsimonious, being based on very few very general a priori assumptions, and iii) they are creative in the following sense: extensive and correct predictions arise as consequences of a few assumptions; when those assumptions are changed the consequences also change. By contrast, all too many financial models start with Brownian motion, then build upon it by including in the input every one of the properties that one wishes to see present in the output.

$$A=\left[\frac{0.618[0.75(17.55+20.31)]}{0.5[14.79]}\right]^{\frac{17.55-2.76}{0.5}}$$
$$=\left[\frac{0.618[0.75(37.86)]}{7.395}\right]^{\frac{14.79}{0.5}}$$
$$=\left[\frac{0.618[28.395)]}{7.395}\right]^{\frac{14.79}{0.5}}$$
$$=\left[\frac{17.54811}{7.395}\right]^{\frac{14.79}{0.5}}=1.26$$

Finally, we have the model of Koch, leaving the following formula based on the case of multifractal functions, two additional considerations should be heeded. The so-called multifractal formalism (to be described below) is extremely important. But it does not by itself specify a random function closely enough to allow analysis to be followed by synthesis:

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$$A = \left[\frac{\frac{1}{2}[\frac{1}{2}(\frac{d}{dI}) + \frac{3}{4}(\frac{d}{dII})(TCf + TCft)]}{\frac{3}{4}[Tcx]}\right]^{\frac{TC-\pi}{\frac{\partial}{\partial I}}}$$

Apply the same values to the formula:

$$A = \left[\frac{0.25[(0.25(0.5)) + ((0.75(1))(17.55 + 20.31))]}{0.75[14.79]}\right]^{\frac{17.55-2.76}{0.25}}$$

$$= \left[\frac{0.25[(0.125) + ((0.75)(37.86))]}{11.0925}\right]^{\frac{14.79}{0.5}}$$

$$A = \left[\frac{0.25[0.125 + 28.395]}{11.0925}\right]^{\frac{14.79}{0.5}}$$

$$= \left[\frac{0.25[28.52]}{11.0925}\right]^{\frac{14.79}{0.5}}$$

$$= \left[\frac{7.13}{11.0925}\right]^{\frac{14.79}{0.5}}$$

$$= 0.00000210$$

The funding base formula variable is as follows one begins with two statistically independent random functions F (TCf) and TCf (t), where TCf (t) is non-decreasing. Then one creates the "compound" function F [TCf (t)] = ϕ(t). Choosing F (TCf) and θ (t) to be scale-invariant insures that TCf (t) will be scale-invariant as well. A limitation of compounding as defined thus far is that it demands independence of F and TCf, therefore restricts the scope of the compound function

$$F = \left[\frac{A\ TCf}{A\ TCx}\right]\frac{\frac{Di}{Di-} + \varepsilon^2}{(\ln\theta)^{\frac{1}{2}}}$$

Where:
F = Financing
A = Leverage
TCf = Fixed exchange rate
TCx = flexible exchange rate
Di = direct currency
Di- = indirect currency
θ = Infinite
ε = Infinite
1/2 = Brownian

Using the values:

$$F = \frac{90}{180} = 0.5$$

$$A = \frac{45}{180} = 0.25$$

Exchange rate of the Bank of Mexico $TCf = 17.33$, whereTCx = TCf - Annual Inflation Subyancente with TCf and Annual Inflation $TCx = 17.33 - 2.76 = 14.57$ by $Di- = 17.33, \theta = -1$ and $\varepsilon = 8.4$, applying values to the original formula.

$$F = \left[\frac{(0.25)(17.33)}{(0.25)(14.57)}\right]\frac{\frac{0.05}{17.33} + 8.61^2}{(\ln -1)^{\frac{1}{2}}}$$

$$= \left[\frac{4.33}{3.64}\right]\frac{\frac{0.05}{17.33} + 8.61^2}{1^{0.5}}$$

$$= \left[\frac{4.33}{3.64}\right]\frac{\frac{0.05}{17.33} + 74.13}{1}$$

$$= \left[\frac{4.33}{3.64}\right]\frac{74.13}{1} = 88.182$$

We keep this result and today we do the exercise with the Lagrangian model, remembering what this model tells us, the formula would be the NEXT:

$$F = \left[\frac{\log A\,(\ln Tcf)}{\frac{A}{TCx}}\right]^{\frac{\frac{Di}{Di-} + \varepsilon^2}{(\ln\theta)^{\frac{1}{2}}}}$$

Apply the same values to the formula:

$$F = \left[\frac{(\log 0.25)(\ln 17.33)}{\frac{0.25}{14.57}}\right]^{\frac{\frac{0.05}{17.33}+8.61^2}{(\ln -1)^{\frac{1}{2}}}} =$$

$$\left[\frac{(-0.60)(2.58)}{0.017}\right]^{\frac{\frac{0.05}{17.33}+74.13}{1^{.0.5}}} = \left[\frac{-1.548}{0.017}\right]^{\frac{\frac{0.05}{17.33}+74.13}{1}} = -1.756$$

By recalling the theory Lemma of ito with the following formula is obtained based on the model Lagrangian

$$F = \left[\frac{(\lim A)\,(\frac{d}{d1}\,TCf)}{\frac{A}{TCx}}\right]^{\frac{\frac{Di}{Di-}+\varepsilon^2}{(\frac{d}{d1}-1)^{\frac{1}{2}}}}$$

Apply the same values to the formula:

$$F = \left[\frac{((0.618)\,0.25)((0.5)\,17.33)}{\frac{0.25}{14.57}}\right]^{\frac{\frac{0.05}{17.33}+8.61^2}{((0.5)-1)^{\frac{1}{2}}}} =$$

$$\left[\frac{(0.1545)(8.665)}{0.017}\right]^{\frac{\frac{0.05}{17.33}+74.13}{|0.7071|}} =$$

$$\left[\frac{1.338}{0.017}\right]^{\frac{\frac{0.05}{17.33}+74.13}{0.7071}} = 5.733$$

Finally we have the model of Koch, leaving the following formula based on the model Lagrangian

$$F = \left[\frac{(\frac{1}{2}A)\,(\frac{3}{4}\,TCf)}{\frac{A}{TCx}}\right]^{\frac{\frac{Di}{Di-}+\varepsilon^2}{(\frac{3}{4}-1)^{\frac{\partial}{\partial 1}}}}$$

Apply the same values to the formula:

$$F = \left[\frac{((0.25)(\,0.25))\;((0.75)(17.33))}{\frac{0.25}{14.57}}\right]^{\frac{\frac{0.05}{17.33}+8.61^2}{((0.75)(-1))^{0.25}}}$$

$$= \left[\frac{(0.0625)\;(12.9975)}{0.017}\right]^{\frac{\frac{0.05}{17.33}+74.13}{0.9306}}$$

$$F = \left[\frac{(0.0625)\;(12.9975)}{0.017}\right]^{\frac{\frac{0.05}{17.33}+74.13}{0.9306}}$$

$$= \left[\frac{0.8123}{0.017}\right]^{\frac{\frac{0.05}{17.33}+74.13}{0.9306}} = 5.648$$

The result shows a negative leverage, thus comparing other companies, Grupo Herdez, does not require extra capital or another company to generate profit, as is well positioned in the Mexican stock exchange.

Conclusions

As we can see in the results, leverage turns out to be negative, therefore, it was concluded that this company is not required to have leverage, as the result of funding was higher than expected, so we can see that account with sufficient capital generated profits.

It is important to construct the financial models of the required variables to generate a complete report of the company to which it is planning to invest capital, it should consider taking the actual data from reliable sources, keep them updated and in that way get a better result. As we said at the beginning of the article, if we generate with mathematical models the finances have a better result to be checked, so you do not invest in a company that will not leave any profit.

The companies that are leveraged must have control of movements of money both flow

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that enters and leaves, it is important to recognize that you can not throw money blindly into a business only to invest, we must learn what we leave more profit than losses.

References

González-del Foyo, M. E., & García-Escalona, E. C. (2016). EL ANÁLISIS APALANCAMIENTO OPERATIVO Y SU RELACIÓN CON EL RIESGO OPERATIVO EN LAS EMPRESAS CUBANAS. Anuario Facultad de Ciencias Económicas y Empresariales, 2, 12-21.

Echeverría, R. A., Garza, J. M., García, G., León, N., Alanís, E. C. G., & Garza, J. R. S. ESTRUCTURA ÓPTIMA DE CAPITAL: ANÁLISIS DE LA TEORÍA DEL TRADE-OFF ENTRE PATRIMONIO Y DEUDA PARA MINIMIZAR EL COSTO DE CAPITAL (CPPC) Y MAXIMIZAR EL VALOR DE LA EMPRESA (MARKETCAP).

de Deane, C. A., Corengia, Á., de Fanelli, A. G., & Carranza, M. P. (2016). La investigación en las universidades privadas de la Argentina. Cambios tras las políticas de aseguramiento de la calidad y financiamiento competitivo. REICE. Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación, 12(3).

Arnaudo, M. F., Lago, F., Moscoso, N., Báscolo, E., & Yavich, N. (2016). concentración y desigualdades en el financiamiento de las obras sociales posdesregulación: un análisis comparativo de los años 2004 y 2011. Salud Colectiva, 12(1), 125-137.

Escamilla, M. R., & Torrado, F. M. (2012). Tecnología fractal aplicada a los precios del consumidor racional. Investigación: cultura, ciencia y tecnología, (8), 32-37.
RAMOS ESCAMILLA, M. D. J. (2013). DINAMICA ECONOMICO FINANCIERA ACTUAL (Doctoral dissertation).

Escamilla, M. R., Vargas, M. J. S., & García, M. M. (2013). ITERACIÓN FRACTAL DE COMPUTO IFS EN LOS MERCADOS FINANCIEROS. Rect@, (4), 223.

Miranda Torrado, F., & Ramos Escamilla, M. (2015). Regiones factibles y óptimas del Iso-Beneficio del Consumidor (Artículos y Miscelánea).

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Financing Fractal in the IT sector: Case America Movil

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Abstract

The aim of this article is to develop six mathematical models to predict the value of stocks from one of the leading telecommunication companies on the American continent, America Movil, S.A.B. DE C.V. three months into the future. A proposal comprising three levels will be made based on the results, to determine if the investment is viable. Using as a method the following mathematical models: Miller's partition, Fibonacci, Carnot's cicle, pivot, stock market and fractal analysis. Fractals and the Current Financial Economy (FEFA) will be used as a computer support tool to calculate ecuations automatically in the models that had been mentioned before. After obtaining the results of predictions, we plan to make the proposal of the three risk levels of investment classified into low, medium and high. Finally, all this plus the result of predictions will help us determine if the investment in this telecommunication company is viable, this could be verify after three months.

Government IT, telecommunications, risk, investment

Resumen

El objetivo de este artículo es desarrollar seis modelos matemáticos para predecir el valor de las acciones de una de las emisoras líder en telecomunicaciones en el continente americano AMERICA MOVIL, S.A.B. DE C.V. esto a un futuro de tres meses. En base a los resultados se hará la propuesta en tres niveles de riesgo para poder determinar si la inversión puede ser viable. Empleando como metodología los modelos matemáticos de: partición de Miller, Fibonacci, ciclo de Carnot, pivot, stock market y análisis fractal. Se utilizara como apoyo la herramienta computacional Fractals and the Current Financial Economy (FEFA), para el cálculo automático de ecuaciones en los distintos modelos antes mencionados. Después de haber obtenido los resultados de las predicciones, se espera obtener la propuesta de tres niveles de riesgo de inversión clasificados en bajo, medio y alto. Esto al final nos permitirá determinar en base a los niveles de riesgo, si es viable la inversión en la emisora, lo cual se comprobara transcurrido los tres meses.

Gobierno de T.I., telecomunicaciones, riesgo, inversión

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Introduction

Nowadays, information technology has become a core part of the companies, and at the same time occupies a main part in business strategy. As a consequence, we need to broaden the vision of IT and create a financial approach and also to contemplate the possibility of investment in IT companies not only because of the quality and the services they provide.Clearly in Mexico, two main players can be distinguished in the media and telecommunications: Televisa and America Movil-Telmex. These companies maintain a confrontation that begins in the mexican market and continues in the Spanish-speaking world, said [Huerta-Wong, J. E., & Gómez García, R., 2013].

America Mobile is born from the extinction of telephony values, cable television (Cablevision) and other values from Telmex. The company keeps remained fully in the hands of the financial institution Grupo Carso, even though it becomes an independent company from Telmex and its parent company, America Movil stills having the same stockholders, narrates [López, A., 2015] about the company.As [Casanova, L., 2014] says, America Mobile has taken the advantage of an emergent upper-middle class which needs a mobile phone and with its competitors were able to increase an important penetration of 90 percent in the use of mobile phones, it was more than twice the world average. All this has allowed to position themselves within the global market.

But, is this background enough to motivate us to purchase the stocks of this broadcaster company?

How could I highlighted if the potential risk of investment approximates to the correct thing?.The following provides a possible solution to the problem of price determination and the margin of broadcaster stocks regarding to its price in the market persisting over the maximum stochastic margin of operation to make more efficient the trade activity from the investors on the stock exchange, mentioned by [Escamilla, M. R., et al, 2013]. In this article, it is presented a similar proposal for prediction and price calculation in a future period of three months.The first section of this article shows how the shares of América Movil behaves in the Stock Market. Secondly, in the next section we use six mathematical methods (Miller's partition, Fibonacci, Carnot cycle, pivot, stock market and fractal analysis) to make predictions about the cost per stock for three months. The third section will present the obtained results after determining the risks levels low, medium and high, these results would allow us to make a proposal. In the following section, the conclusions based on the results of the mathematical methods will be explained and finally references are found in the fifth section.

America mobile in the BMV

The regulations of the Mexican Stock Exchange, indicate that a company can begin to issue stock, once fulfilled of certain specifications for registration and comply with the process which must be authorized by the BMV and the CNBV.Once the company begins trading on the stock exchange must meet the maintenance requirements of registration.

According to these provisions and after consultation on the website of the Mexican Stock Exchange, is determined that these are fulfilled by the company and remains in compliance with a minimum of 12 % of stock capital and at least 100 investors, this according to the 2016 annual review.

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Company	Series	Minimum investors 100	12% Stock Capital
AMX	AA	N.A.	✓
AMX	A	✓	✓
AMX	L	✓	✓

Table 1 Maintenance requirements (https://www.bmv.com.mx/es/emisoras/informacionmatenimiento/AMX-6024-CGEN_CAPIT)

Stock performance

The date of quotation on the Mexican Stock Exchange of America mobile company, to establish the market matrix corresponds to February 8th, 2016.

Stock Market Matrix		
Variable	**Concept**	**Value**
V.P.	Volume sales	124777
Put	Position sales	12.86
V.C.	Volume purchases	79595
Call	Position purchases	12.85
Pu^H	Price last fact	12.85
VAR	Variation	-1.30
VOp	Volume operated	13253915
Max	Maximum	13.03
Min	Minimum	12.83
Max^A	Max. previous year	17.32
Min^A	Min. previous year	12.12
Pu	Price/Utility	35.726179
P.V.L.	Price/Book value	8.75
UA	Utility f/Stock	0.36
V.L.A.	Book value f/Stock	1.48
A.C.	Stocks circulation	41,935,402,225

Table 2 Stock Market Matrix (https://www.bmv.com.mx/es/emisoras/estadisticas/AMX-6024)

Mathematical modeling

Sales

To calculate sales, make the subtraction of volume sales divided by weighted average price, raised by the exponent the price of the last fact, to obtain the position of later year sales.

$$P_{radiada} = I^2 R_r \quad (1)$$

$$Ze = Re(w) + Xe(w) = (Rr + Rj) + Xe(w)J \quad (1.1)$$

$$Put = \left(\frac{VP}{PPP}\right)^{Pu^H} \quad (2)$$

$$Put = \left(\frac{5.09}{1}\right)^{12.85} = 9.08$$

It proceeds to makes the subtraction of logarithmic of volume sales plus naperian logarithm of last fact divided by weighted average price on the variable x, to get the position of sales of the previous year.

$$Z_L = jwL\frac{1}{jwC} R_e(w) + jwL\ R_e(w) - \frac{1}{jwC}$$

$$Put = \frac{\log VP + \ln Pu^H}{\frac{PPP}{x}} \quad (3)$$

$$Put = \frac{\log 5.09 + \ln 12.85}{\frac{1}{x}} = \left[\frac{\log 5.09}{\ln 12.85}\right]^1 = 0.27$$

Calculate purchases, make the subtraction of volume purchases divided by weighted average price, raised by the exponent the price of the last fact, to get the position of later year sales.

$$SWR = \frac{Vmax}{Vmin} \text{ (adimensional)} \quad (4)$$

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Vmax= Ei+Er$\frac{Vmax}{Vmin} = \frac{\text{Ei+Er}}{\text{Ei−Er}}$

$\eta = \frac{RL}{RL+Rs}\frac{RL}{Rs+RL} = \frac{RL}{2RL} = 0.5 = 50\%$ (4.1)

$L(\in) \rightarrow$(k-1)X/K$\leq x < kX; \frac{(h-1)X}{K} \leq y < \frac{hY}{k}$ (4.1.1)

Log(L)= $L_0 \lim_{n\to\infty} \frac{4^n}{3} = \infty$

D=$\frac{logN}{log\frac{1}{r}}$ $h^2+\left(\frac{1}{2}\right)^2$ $h = \sqrt{l^2} - \left(\frac{1}{2}\right)^2 = \sqrt{l^2} - \frac{l^2}{4} = \sqrt{\frac{3}{4}l^2} = \frac{1\sqrt{3}}{2}$ (4.1.2)

A=$\frac{B.h}{2} = \frac{l\frac{l\sqrt{3}}{2}}{2} = \frac{l^2\sqrt{3}}{4}$ A+$\sum_{n=1}^{\infty}\left(\frac{4^{n-1}}{3^{2n-1}}\right)A$

$Call = \left(\frac{VC}{PPP}\right)^{Pu^H}\left(\frac{4.90}{1}\right)^{12.85} = 8.86$ (5)

It proceeds to make the subtraction of logarithmic of volume purchases plus naperian logarithm of last fact divided by weighted average price on the variable y, to get the position of purchases of the previous year.

$Call = \frac{\log VC + \ln Pu^H}{\frac{PPP}{y}}$ (6)

$$Call = \frac{\log 4.90 + \ln 12.85}{\frac{1}{x}} = .27$$

By calculate the prices, firstly substract the sum of the maximum and the minimum of the previous year, divided by the subtraction of the maximum divided by the minimum raised by the variation. The result of this is raised by the exponent of the ½.

$\sum_{n=1}^{\infty} ar^{n-1}$ (7)

P(Kn)=$\lim_{n\to\infty} long\ (k_n) = \lim_{n\to\infty} 3\left(\frac{4^n}{3^n}\right) = \infty$

D=$\frac{logN}{\log\left(\frac{1}{r}\right)}$ (7.1)

A_2=$\frac{3A_0}{4} - \frac{3A_0}{16} = \frac{9A_0}{16} = \frac{3^2}{4} A_0 A_k - 3^k \frac{A_0}{4^{k+1}} = \frac{3^k}{4^k}A_0 - \frac{3^k}{4^{k+1}}A_0 = \frac{4(3^k)-3^k}{4^{k+1}}A_0$

$A_{k+1} = \left(\frac{3}{4}\right)^{k+1} A_0 \lim_{k\to\infty} A_k = A_0 \lim_{k\to\infty}(\frac{3}{4})^{k+1} = 0$ (7.1.1)

$P^I = \left[\frac{Max^A + Min^A}{\left(\frac{Max}{Min}\right)^{VAR}}\right]^{\frac{1}{2}} = \left[\frac{17.32+12.12}{\left(\frac{13.03}{12.83}\right)^{1.3}}\right]^{\frac{1}{2}} = 5.37$ (8)

It proceeds to subtract the maximum of the previous year divided by the logarithm of maximum plus the minimum of the previous year, divided by the naperian logarithm of the minimum. The result of this, is the subtraction of the variation divided by the two. The result is raised by the exponent fractional of the ½.

P_1=$\frac{P_0}{4} = \frac{P_0}{2}$ (8.1)

$$\frac{P_n}{2} = \frac{P_{n-1}}{4} \rightarrow P_n = \frac{P_0}{(2)^n}\lim_{n\to\infty} P_n = \lim_{n\to\infty}(\frac{3}{2})^n = \infty$$

Q=$\frac{1}{k^3a^3} + \frac{1}{ka}$ (8.2)

PF=$(\frac{2\pi a}{\lambda})^3$=$k^3a^3$

PF =$\frac{1}{Q}$ (8.2.1)

$$\delta = \frac{f_{n+1}}{f_n} \approx 2\ k\frac{c}{f_n}\cos\left(\frac{\propto}{2}\right)\delta^n$$

$$P^{II} = \left[\frac{\left(\frac{Max^A}{logMax}\right)+\left(\frac{Min^A}{lnMin}\right)}{\frac{VAR}{2}}\right]^{\frac{1}{2}} =$$

$$\left[\frac{\left(\frac{17.32}{log13.03}\right)+\left(\frac{12.12}{ln12.83}\right)}{\frac{1.3}{2}}\right]^{\frac{1}{2}} = 5.58 \quad (9)$$

Subtract P^I divided by P^{II} for the price value.

$$D = \frac{\log N}{\log\frac{1}{r}} = \lim_{r\to 0} - \frac{\log N}{\log\ r} \quad (10)$$

$$A_n = \left(\frac{3}{4}\right)^n = \lim_{n\to\infty} A_n = A_0 \lim_{n\to\infty}\left(\frac{3}{4}\right)^n = 3^n\left(\frac{1}{2}\right)^n = P_0 = P_0\left(\frac{3}{2}\right)^n \quad (10.1)$$

$$P_\infty = \lim_{n\to\infty} P_n = P_0 \lim_{n\to\infty}\left(\frac{3}{2}\right)^n \lim_{n\to\infty} - \frac{\log 3^n}{\log 2^{-n}} = \frac{\log 3}{\log 2} = 1,58496$$

$$P = \left(\frac{P^I}{P^{II}}\right)\left(\frac{5.37}{5.58}\right) = .99 \quad (11)$$

By calculate the stocks, firstable subtract the volume operation subtraction raised by the exponent of the ½ divided by the average of the weighted average price raised by the exponent of the ¾, all this raised by the exponent of the value of the price

$$AC^I = \left[\frac{VOp\left(\frac{1}{2}\right)}{PPP\left(\frac{3}{4}\right)}\right]^P = \left[\frac{7.12\left(\frac{1}{2}\right)}{1\left(\frac{3}{4}\right)}\right]^{.99} = 2.64 \quad (12)$$

After this, make the subtraction of the multiplication of the ½ by the logarithm of the operation volume divided by the naperian logarithm of the weighted average price, all of this raised by the exponent fractional of the ¾, divided by the subtraction of the price divided by the two.

$$L_n = 4^n\left(\frac{1}{3}\right)^n L_0 = \left(\frac{4}{3}\right)^n L_0$$

$$L_\infty = L_0 \lim_{n\to\infty}\left(\frac{4}{3}\right)^n = \infty \quad (12.1)$$

$$A_n = \frac{\sqrt{3}}{4}\left(\frac{l_0}{3}\right)^2 + 4\frac{\sqrt{3}}{4}\left(\frac{l_0}{3^2}\right)^2 \sum_{k=1}^{n} 4^{k-1}\frac{\sqrt{3}}{4}\left(\frac{l_0}{3^k}\right)^2$$

$$AC^{II} = \left\{\frac{\left[\left(\frac{1}{2}\right)\left(\frac{\log VOp}{\ln PPP}\right)\right]^{\frac{3}{4}}}{\frac{P}{2}}\right\}\left\{\frac{\left[\left(\frac{1}{2}\right)\left(\frac{\log 7.12}{\ln 1}\right)\right]^{\frac{3}{4}}}{\frac{.99}{2}}\right\} = .5 \quad (12.1.1)$$

$$A_\infty = \lim_{n\to\infty} A_n = \frac{\sqrt{3}}{4^2} l_0^2 \lim_{n\to\infty} \sum_{k=1}^{n}\left(\frac{4}{3^2}\right)^k = \frac{4}{3^2}\frac{\sqrt{3}}{4^2} l_0^2 \lim_{n\to\infty}\sum_{k=0}^{n-1}\left(\frac{4}{3^2}\right)^k \quad (13)$$

$$A_\infty = \frac{4}{3^2}\frac{\sqrt{3}}{4^2} l_0^2 \frac{1}{1-\frac{4}{3^2}} = \frac{1}{5}\cdot\frac{\sqrt{3}}{4} l_0^2$$

$$AC = \frac{\log AC^I}{\ln AC^{II}} \quad (14)$$

$$AC = \frac{\log 2.64}{\ln .57} = .75$$

To calculate the average of put, make the subtraction of the addition from the position of previous year sale, plus the position of the next year sale divided by two.

$$R = \frac{PutExAnte + PutExPost}{2} \quad (15)$$

$$R = \frac{9.08 + .27}{2}\frac{4.67x100}{100} = 4.67\%$$

To calculate the average of call, make the subtraction of the sum of the position of previous purchase year, plus the position of the next purchase year divided by two.

$$R = \frac{CallExAnte + CallExPost}{2} \quad (15.1)$$

$$R = \frac{8.86 + .27}{2}\frac{4.56x100}{100} = 4.56\%$$

To calculate the average of price, the sum of P^I is substracted, plus P^{II} divided by two. All this, is raised to value of price.

$$R = \left(\frac{P^I+P^{II}}{2}\right)^P \left(\frac{5.37+5.58}{2}\right)^{.99} \frac{5.38x100}{100} = 5.38\% \quad (16)$$

To calculate the average of stock, the sum of AC is substracted, plus AC^{II} divided by two, all of this is raised to value of the stock.

$$R = \left(\frac{AC^I+AC^{II}}{2}\right)^{AC} = \left(\frac{2.64+.57}{2}\right)^{.75} \frac{1.42x100}{100} = 1.42\% \quad (16.1)$$

Miller Partition

For our mathematical model, were use the variable shown on the table 3, which were quoted on February 8th, 2016 in the website of Banxico, the following variables will be used: sale position, purchase position, stock value and price value, previously calculated.

∫ =	Inflation	2.87
x =	Cetes	3.93
y =	Object Rate	3.25
z =	Canadian Dollar	13.38

Table 3 Modeling variables Miller partition (https://www.banxico.org.mx/)

Miller's partition model would be applied when making the substraction of the sales position limit plus the purchase position limit. All this mentioned, divided by the Cetes integral value, raised to the sales position multiplied by the integral of the target rate, raised to the purchase position. The result is raised to the naperian algorithm from the action values substraction on the price.

All of this is added to the result of the substraction of the position sales logarithm division on the position purchase logarithm, rised to the value of the price, plus value of the stock division on the enhanced price value, to the sales position difference less the purchase position. All this divided by Canadian dollar price.

$$D = \lim_{n-\infty} - \frac{\log 4^n}{\log 3^{-n}} = \frac{\log 4}{\log 3} = 1{,}26186 \left(\frac{4}{3}\right)^n L_0$$

$$P_\infty = \lim_{n\to\infty} 3\left(\frac{4}{3}\right)^n L_0 = \infty \quad (17)$$

$$A_1 = \frac{\sqrt{3}}{4} l_0^2 + 3\frac{\sqrt{3}}{4}\left(\frac{l_0}{3}\right)^2 \frac{\sqrt{3}}{4} l_0^2 + 3\frac{\sqrt{3}}{4}\left(\frac{l_0}{3}\right)^2 + 3 * 4\frac{\sqrt{3}}{4}\left(\frac{l_0}{3^2}\right)^2 \sum_{k+1}^{n} 3 * 4^{k-1}\frac{\sqrt{3}}{4}\left(\frac{l_0}{3^k}\right)^2 = \frac{\sqrt{3}}{4} l_0^2 \left[1 + \frac{3}{4}\sum_{k=1}^{n}\left(\frac{4}{3^2}\right)^k\right]$$

$$\frac{\sqrt{3}}{4} l_0^2 \left[1 + \frac{1}{3}\sum_{k=0}^{n-1}\left(\frac{4}{3^2}\right)^k\right] \quad (17.1)$$

$$A_\infty = \frac{8}{5}\frac{\sqrt{3}}{4} l_0^2 = \frac{8}{5} A_0 \lim_{n\to\infty} - \frac{\log(3 * 4^n)}{\log 3^{-n}} = \lim_{n\to\infty} \frac{\log 3 + n\log 4}{n * \log 3} =$$

$D_{A^=}$ $= 0.31$

The first result that gives us an increase in stock value of 0.31 cents on the quoted price action is obtained, the Fibonacci sequence is a ordering of numbers, beginning with a number with which the following is equal to the sum of the two immediately preceded.

By using higher numbers, it will be seen that the predecessor on a number it is to limit 0.618; the first number on the result is equal to 0.382; the number on predecessor tends to be 1.68; the square root of 0.618 is 0.786; the square root of 1.68 is equal to 1.27. These resulting numbers, are used to predict stock markets, when adding three numbers in a row of sequence is divided by two, the result is equal to the last number added, tells us [Brieva, F. M., et a, 2014].

To calculate the retrogression and extension previous year, is entering the maximum, minimum and price range of the stock market, which are described on table 2, in the computing tool FEFA, to obtain the amounts specified in the table 4.

ExAnte (Down/Base)		
%	**Retrogression**	**Extension**
200	1	12.73
100	12.87	12.53
50	12.95	1

Table 4 ExAnte in Miller Partition

Retrogression ExAnte

Add two hundred, plus one hundred and the fifty percent of the retrogression of the previous year, doing the subtraction divided by the number of added amounts

$$P_i \equiv u_{i(2)-U_{I(0)}} P_{1-} P_2 \frac{\mathrm{U-i}}{\mathrm{I}}$$

$$S(a) = \sum a^2 + a\lfloor I(x+1,y) - I(xy) \rfloor + \sum a \lfloor I(x,y+1) - I(x,y) \rfloor \quad (20.1)$$

$$\frac{1 + 12.87 + 12.95}{3} = 8.94$$

Extension Ex Ante

Add the two hundred, plus one hundred and the fifty percent of the extension of the previous year, making the subtraction divided by the number of added amounts.

$$\frac{12.73 + 12.53 + 1}{3} = 8.75$$

Naperian logarithm and logarithm are applied to results and then summed to obtain the total.

Logarithmic	Result retrogression	Result extension	Total
log	0.95	0.94	1.89
ln	2.19	2.17	4.36

Table 5 ExAnte Logarithmic

$$\frac{(4.36-1.89)}{2} = 1.23$$

Retrogression and the extension of the next year are calculated, with the amounts shown on table 6.

ExPost (Up/Resistance)		
%	**Retrogression**	**Extension**
200	1	13.32
100	12.83	13.12
50	12.93	1

(20)

Table 6 ExPost in Miller Partition

ISSN-2444-5037

etrogression ExPost

Add the two hundred, plus one hundred and the fifty percent of the retrogression of the later year, doing the subtraction divided by the number of added amounts.

$$D_{sa=2-mD_{sa,1}-\ D_{sa,2}} \quad (20.2)$$

$$\frac{d}{dxi} < flg > := \int f\,(x)g(x)dm\Omega(\mathrm{x})>$$

Extension Ex Post

Add the two hundred, plus one hundred and the fifty percent of the extension from the next year, making the subtraction divided by the number of amounts.

$$\frac{13.32 + 13.12 + 1}{3} = 9.14$$

Naperian logarithm and the logarithm are applied to results then are summed to obtain the total.

Logarithmic	Result retrogression	Result extension	Total
log	0.95	0.96	1.91
ln	2.19	2.21	4.40

Table 7 ExPost Logarithmic

$$\frac{(4.40 - 1.91)}{2} = 1.24$$

The difference is calculated from the total of the following year, less the total from previous year $-1.24 + 1.23 = |-0.01| \to 0.01$, the result that shows an increase in stock value of 0.01 cents on the quoted price action, then is obtained this method the computing tool used is FEFA. Selecting the Stock market option, where we enter the maximum price, minimum price, maximum range and the maximum range, the outstanding shares, the volume operation and the weighted average price.

Concept	Value
Maximum price	13.03
Minimum price	12.83
Maximum price range	15.17
Minimum price range	12.47
Circulation volume log	10.62
Stock market broadcasters log	7.12
Stock market log	1

Table 8 Modeling variables Stock Market

After calculation of the equation by the computing tool FEFA, it shows us a series of results ranging of z_1 to z_{50}, which are summed in ranged in ten.

$$\{e\lambda : \lambda€A\} \quad (20.3)$$

$$\{\Omega + T : +€\, T\}$$

$$CA - A2^{d} = \Phi \quad (20.3.1)$$

$$€ \to \frac{}{i^{i-€x.x}} f(x)dx, € \, L^{2}(\Omega) \quad (20.3.2)$$

$$F\mu f : \lambda \to \int^{-2\lambda} \lambda \to f(xld\, m\lambda) \int lfx^{2}\; d\mu\,(x)$$
$$= \int I(F\,\mu_{\mathrm{F}})(\,\lambda)I^{2}\, d\upsilon(\,\lambda)$$
$$= \mu(\mathcal{O} + t)$$

$$\mathrm{A}_{\text{¸}}\mathrm{B}C\mathbb{R}^{d}. If - {}_{\chi}Af\|\mu \le €\|Ff - {}_{\chi}BFf\|\mu \le \delta(1-\varepsilon-\delta)^{2} \le \mu(A)v(B) \quad (21)$$

$$R^{n} + €\mathbb{Z}N^{-¼}(e^{i2\Pi b - l})$$

$$\mathrm{L}{=}X_{r} := \left\{ \sum_{x=0}^{n} R^{*k} l_{k} € \, L \right\} \quad (21.1)$$

ISSN-2444-5037

$\mu =$

$N^{-1} \sum_{b\in B} \mu \; o\sigma^{-1}_{b} N^{-1} \sum_{b\in B} eb(t) \prod_{k\_0}^{\infty} XB\,($

$R^{*}k_{t}) \; \sum_{\lambda\in L} |\hat{\mu}(t-\lambda]^{2} \; T \in \mathbb{R}^{2}$

$(Cq)(t) := \sum_{I\in L} |XB(t$

$- l)^{2}\, q(p_{l\,(t)}) \left\{ \sum_{k=0}^{\infty} \; R^{*-k} l_{k} : l_{k} \in L \right\}$

$= \||\nabla q|_{2}\|\infty$

z1=	180.72	z11=	193.17	z21=	180.72
z2=	169.78	z12=	298.62	z22=	178.86
z3=	22.68	z13=	7.69	z23=	13.03
z4=	9.31	z14=	7.79	z24=	13.03
z5=	10.39	z15=	12.04	z25=	12.93
z6=	186.46	z16=	8.68	z26=	10.14
z7=	205.76	z17=	9.51	z27=	10.64
z8=	22.84	z18=	9.56	z28=	11.03
z9=	9.84	z19=	7.68	z29=	13.03
z10=	10.36	z20=	9.09	z30=	13.03
Total	828.13	Total	563.83	Total	456.43

z31=	25.81	z41=	13.19
z32=	25.58	z42=	13.16
z33=	25.49	z43=	13.25
z34=	26.18	z44=	13.14
z35=	25.87	z45=	12.6
z36=	12.3	z46=	12.61
z37=	12.29	z47=	12.6
z38=	12.82	z48=	19.2
z39=	13.15	z49=	13.16
z40=	50.1	z50=	13.04
Total	229.59	Total	135.95

Table 9 Stock Market FEFA

The values are summed and subtracted on the number of results is made. And finally the result is smoothed by applying logarithm.

$$\frac{828.13 + 563.83 + 456.43 + 229.59 + 135.95}{50} = 44.28 = log44.28 = 1.64$$

The result that gives us an increase in stock value of 1.64 cents on the quoted price action, is obtained, using the computing tool FEFA, select the Pivot Calculator option and enter values maximum, minimum, closure and opening, once the calculation has been done by the tool. We use values of resistance1 y support1, which are summed and then divided by harmonics, brownian, recursive and fractals.

	Harmonics	**Brownian**	**Recursive**	**Fractals**
Resistance	9.35	7.51	2.19	7.01
Support	-3.67	-5.51	-0.19	-6
Total	5.68	2	2	1.01

Table 10 Pivot FEFA

The totals are summed and the subtraction is made on the total amount.

$$\frac{(5+2+2+1.01)}{4} = \frac{2.67}{2} = 1.33$$

The result shows an increase in the value of the stock of 1.33 cents over the quoted price of the stock.

Carnot Cycle

The GISF is presented as an interesting alternative in the current context, in which many fractal space investigations or cut, geographic emphasize the importance of the local and global or fractal on aggregate [Escamilla, M. R., 2011].We employ the GISF (Geographic Information System Fractal) to our mathematical model.

ISSN-2444-5037

The position sales and position purchases are summed, raised by ½, of this result makes the subtraction of the difference of volume sales minus the volume purchases divided by two, raised by ¾.

$$GISF = \frac{(Put+Call)^{\frac{1}{2}}}{\left(\frac{VCall-VPut}{2}\right)^{\frac{3}{4}}} \frac{(12.86+12.85)^{\frac{1}{2}}}{\left(\frac{4.90-5.09}{2}\right)^{\frac{3}{4}}} = 29.63$$

(22)

The result is smoothed by using the naperian algorithm.

$\rightarrow ln29.63 \rightarrow 3.38$

Once the GISF is obtained, we place it in the tool FEFA, in the Carnot cycle option, next to the maximum range, minimum range, sales and purchase volume.

Concept	**Value**
Range maximum	15.17
Range minimum	12.47
Volume A	4.9
Volume B	5.09
GISF	3.38

Table 11 Modeling variables Carnot Cycle

The tool will shows several values, for which we would only use the market value of the oustanding shares, cost, margin, range and Carnot's volatility.

Concept	**Value**
Market acc circ	0.11
Cost	0.31
Margin	0.31
Range	0.63
Carnot volatility	0.17

Table 12 Carnot Cycle FEFA

The difference of the margin, less the cost, is substracted and divided by the market value of the oustanding shares is obtained.

$$\left(\frac{Margin-Cost}{MAC}\right)^{CV} \left(\frac{0.31-0.31}{0.11}\right)^{0.17} = 1.95 \qquad (23)$$

Consequently, it is shown a result with an increase in the value of the stock of 1.95 cents over the quoted price.Such ensembles are characterized for having a wide scale similarity, also for not being differentiable and because the exhibit the ¾ fractional dimension Escamilla M. R., et al(2013).

Concept	**Value**
Maximum price	13.03
Minimum price	12.83
Maximum price range	15.17
Minimum price range	12.47
Circulation volume log	10.62
Stock market broadcasters log	7.12
Stock market log	1

Table 13 Modeling variables Fractal Analysis

The values are placed in FEFA, in the Fractal Analysis option, where we can observe 169 amounts, which would be divided into four groups: North from Z_1 to Z_{43}, East from Z_{44} to Z_{86}, South from Z_{87} to Z_{129} and West from Z_{130} to Z_{169}.

$$\beta \coloneqq 2\pi \text{ (B)} \max_{\substack{b,b' \in B \\ l \in L}} \| \sin(2\pi(b-b')(.-l)\|\infty$$
$$\leq |(N-1)^2 N^{-1}\beta \|R^{-1}\| \ (23.1)$$

The group is averaged and smoothed using the naperian logarithm, in order to unify the amounts.

Pole	**Value**	**Angle**
North	91.33	1
East	23.87	90
South	75.12	180
West	42.11	270

Table 14 Fractal Analysis FEFA

ISSN-2444-5037

Each pole value is multiplied by the angle that represents. Immediately, the North Poles are added and rised to the fractional ¾ amount. After this, we would make the subtraction divided by the South Pole difference, less the West Pole rised to the ½ fractional amount.

$$\frac{[1(91.33)+(90(23.87))]^{\frac{3}{4}}}{[(180(75.12))-(270(42.11))]^{\frac{1}{2}}}=7.01*4$$
$$=28.07=(\log 28.07)=1.44$$

The result is smoothed applying the algorithm, shows an increase in the value of the stock of 1.44 cents over the quoted price.

Mathematical Modeling	**Value**
Fibonacci	0.01
Miller	0.31
Pivot	1.33
Fractal Analysis	1.44
Stock Market	1.64
Carnot Cycle	1.95

Table 15 Results mathematical modeling

High Risk:Taking the two results that reflect the smallest amount, the logarithm is applied to the smallest one and the preceeded amount is added while applying the naperian logarithm. All of this divided by two.

R^n b.l= Rb .$R^{*(n-1)}$ (24)

f(x)=$\sum \lambda \in L$<$e\lambda|f>\mu^{\frac{\lambda}{z}}\,\mu(\triangle):=$
$m(\triangle\cap\Omega), v(\triangle):=\sum_{k=0}^{\alpha}=o\mu 0(\triangle+k)$

$$L=M*G(1-D)\ \log(I)$$
$$=\log(M)+\log(G)*(1-D)$$

$$.99\ High\rightarrow\frac{log0.01}{ln0.31}=\frac{-2+1.17}{2}$$
$$=\frac{-0.41*100}{100}=-41\%$$

In this case, the capital investment of 12% is not reached, so it is not a promising company, therefore the risk investment is high and it is not viable.

Medium Risk:Taking the two results of median amount applied to the logarithm of lesser value and the amount that preceded after applying the natural logarithm adds, this divided by two

$$.66\ Medium\rightarrow\frac{log1.33}{ln1.44}=\frac{0.12+0.36}{2}$$
$$=\frac{0.24*100}{100}=24\%$$

Low Risk:Taking the two largest amounts, the logarithm is applied to the smallest one and the preceded amount is added. Once the naperian logarithm is applied, all of this divided by two.

$$.33\ Low\rightarrow\frac{log1.64}{ln1.95}=\frac{0.21+0.66}{2}$$
$$=\frac{0.44*100}{100}=44\%$$

Conclusions

Once that the six proposed mathematical models have been developed, and the level of risk investment was determined, now an investment proposal can be done. After two months from the parent market consulting, it is proved that the value is increasing with the date being April 4th; the purchase value was priced in 13.69 an increase of .84 was observed with regard to 12.85, leaning favorably to the mathemathical models Pivot and Fractal Analysis.Assuming these results, it can be determined that the risk investment in America Movil corresponds to a medium level and it is a viable investment.

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References

ALVARADO TORRES, A. M., ARANDA ZAMORA, S. E., GUADARRAMA OVANDO, J. A., HIDALGO CAMARGO, J. A., IÑÍGUEZ MONTERO, D. A. N. I. E. L. A., & MORENO VARGAS, A. D. D. E. R. L. Y. (2015). ESTRATEGIAS PARA LA CONSOLIDACIÓN DE RED COMERCIAL EMPRESARIAL, SA DE CV.

Brieva, F. M., Rosas, N. C., & Armijos, L. R. (2014). Fibonacci en los Negocios "Acerca de un modelo matemático para pronósticos financieros". Gaceta Sansana, 1(3).

Casanova, L. (2014). El nuevo poder de las corporaciones latinoamericanas. La Responsabilidad Social de la Empresa en América Latina, 435.

Durán Lake, L. E. (2015). Diseño de un plan estratégico para la cadena de suministro de una empresa de Telecomunicaciones.

E.R. Solano María Ramos-Escamilla (2014). Fractal and Finance. Universidad San Francisco Xavier-Bolivia

Escamilla, M. R. (2013). Frontera estocástica del I+ D con cotas fractales para la innovación tecnológica. Economía Informa, 2013(382), 55-75.

Escamilla, M. R. ESTADÍSTICA DE GISF EN LA DINÁMICA ECONÓMICA FINANCIERA ACTUAL. No. 17 Primer cuatrimestre de 2011 REVISTA UNIVERSITARIA DE ECONOMÍA.

Escamilla, M. R., & Méndez, R. L. (2015). Modelación fractal de las fuentes de financiamiento en México. Investigación: cultura, ciencia y tecnología, (14), 35-39.

Escamilla, M. R., & Vargas, O. R. (2013). GIS'F FRACTAL ANALYSIS WITH PIVOTING GRAPHIC. Rect@, (4), 209.

Escamilla, M. R., Torrado, F. M., & García, M. M. (2013). Ciencia fractal: calibración del sector externo en Alemania. Investigación: cultura, ciencia y tecnología, (10), 70-75.

Escamilla, M. R., Vargas, M. J. S., & García, M. M. (2013). ITERACIÓN FRACTAL DE COMPUTO IFS EN LOS MERCADOS FINANCIEROS. Rect@, (4), 223.

Huerta-Wong, J. E., & Gómez García, R. (2013). Concentración y diversidad de los medios de comunicación y las telecomunicaciones en México. Comunicación y sociedad, (19), 113-152.

López, A. (2015). Análisis de América Movil. In Tópicos Selectos de Economía: Volumen III (pp. 76-96). ECORFAN.

Luz áLvarez, C. (2015). MEXICAN TELECOM REFORM: PRIVATE INTEREST FIRST?. Mexican Law Review, 8, 47-74.

Mayor, M. G. O., Davó, N. B., & Martínez, F. R. (2015). VENTAJAS COMPETITIVAS DE LAS EMPRESAS DE TELEFONÍA MÓVIL EN AMÉRICA LATINA: Análisis desde la perspectiva de los grupos estratégicos*. El Trimestre Económico, 82(1), 89.

Miranda Torrado, F., & Ramos Escamilla, M. (2015). Regiones factibles y óptimas del Iso-Beneficio del Consumidor (Artículos y Miscelánea).

Morales, M., Mochi, P., & Girardo, C. (2015). Inversión multilatina¿ aprovecha la integración regional?. espacio abierto, 23(4).

Orcón, M., & Leonardo, C. (2016). Tendencia y desarrollo de los operadores móviles virtuales (OMVS) en el Perú.

Ramos Escamilla, M. (2013). Mapeo fractal con IFS de precios bursátiles.

Ramos, M., & García, L. (2014). Economía y las Oportunidades de Desarrollo: Desafíos en América-Latina.

Ramos, M., Candia, G., & Cornejo, D. (2014). Modelación económica fractal del vivir bien en Bolivia. Investigación: cultura, ciencia y tecnología, (11), 32-39.

Ramos-Escamilla, M. (2015). Stochastic Frontier I & D of fractal dimensions for technological innovation. arXiv preprint arXiv:1509.01212.

Riesco, E. (2015). La asfixia del proteccionismo y confección de un México neoliberal. El caso TELMEX: historia y fundamento del siglo que cambió la economía mexicana.

Ruelas, A. L. (2015). Regulación e internacionalización de las telecomunicaciones mexicanas. Comunicación y Sociedad, (28).

Schwarz, R. M., Recoba, L. V., Sánchez, J. R., Seijas, J. J. H., Carrasco, D. G., & Vieira, E. C. (2015). Telefonía móvil y regulación: a propósito de las recientes ventas y fusiones de las empresas de telecomunicaciones. IUS ET VERITAS, 15(31), 308-321.

Varela, A. I. P. (2015). MEDICIÓN DE COMPETENCIA EN TELECOMUNICACIONES MÓVILES. EL ÍNDICE HALL TIDEMAN COMO ALTERNATIVA AL ÍNDICE HERFINDAHL: UNA APLICACIÓN A MÉXICO. 10 ARTÍCULOS QUE ACERCAN LA COMPETENCIA ECONÓMICA A TU VIDA, 23.

Zárate Ortiz, M. L. (2015). El uso de Internet en México aplicado a la mercadotecnia en e-Business.

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Fractal modeling by "El Puerto de Liverpool", S.A.B. de C.V.

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Abstract

Market Models provides an authoritative and up–to–date treatment of the use of market data to develop models for financial analysis, these models represent a basic way to analyze and represent sales for an enterprise. Data mining for Liverpool will be calculate in five deferent's models to determinate the most reliable way to offer alternative investment. Every option has a different risk management; this factor will be show in the last exercise. The final result will be a comparative analysis based on structural and non-lineal equation models.

The analysis of the economy is currently experiencing a period of intensive investigation and various new developments.This can help to increase the investment to the studies' enterprises.

Fractal risk, Call, Put

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† Investigador contribuyendo como primer autor.

Introduction

The miller partition method gets the info from the initial data to calculate past and post data (with interval for future and past). Discrete approximations of probability distributions as an expected from the partition considered, the probabilities of the points in increasing order. (*Rios, I., Weintraub, A., & Wets, R. J. B. (2016))*.We started determining the numbers to a year and a year ago:the sales position for Liverpool show the next numbers determinate on the next equation:

$$b_y w = f(b_x L) \qquad L^h \qquad \frac{H=In(b_y)}{In(b_x)}$$

$$\frac{1}{[N-1]}\Sigma^{N-1}\left\{\frac{1}{1}\Sigma \quad [I-f(i)]\right\} \quad \frac{1}{2}$$

$$dx/_{dt} = f(x)[\frac{2.85}{2.32}]^{2.32} = 1.61$$

$$dy/_{dt} = f(y)\,\frac{\log\ 2.85+\ln 2.32}{2.32} = 0.55$$

$$xn+1 = f(xn)\ \ 1/2\,(x+2/x)$$

$$xn+1 = {}^{1}/_{2}\,(xn+2/xn)\ \ \frac{1.61+0.55}{2} = 1.08$$

The purchase position is determinate for the next equation:

$$f(x,R_0) = \alpha^{f^2}(x/\alpha,R_1)\alpha^n f^{2n}(x/\alpha^n\,;R_n)\alpha^n f^{2n}(x/\alpha^n\,,R_{n+1}) = \alpha g^2(x/\alpha)[\frac{2.50}{2.32}]^{2.32} = 1.18$$

$$dx/dt = s(y-xy+x-qx^2\ 1/s\,(-y-xy+vz)w(x-z)\ -x+ay+x^2y\,\frac{\log 2.50+\ln 2.32}{2.32} = 0.53$$

$$dy/dt = b-ay-x^2y\ a-x-4xy/(1+x^2)\ bx(1-y/(1+x^2))\ \ \frac{1.18+0.53}{2} = 0.85$$

$$J = 1/(\,1+x^{*^2})\begin{vmatrix} 3x^{*^2}-5 & -4x^* \\ 2bx^{*^2} & -bx^* \end{vmatrix}$$

The value for actions is determinate by:

$Z_e = R_e\ (w) + X_e(w)\ J\ R_r + R_j\ \ R_e\ (w) + X_e\ (w) = (R_r + R_j) + X_e\ (w)\ J$

$$AC' = \left[\frac{[5.73]^{1/2}}{[2.32]^{3/4}}\ \right]^{1.56} = 2.80$$

$$AC'' = \frac{\left[{}^{1}/_{2}[\frac{5.73}{2.32}]\ \right]^{3/4}}{1.56} = 0.63$$

$$R_{AC}: \frac{0.63+2.80}{2} = 1.71$$

Calculating the Price:

$$P': [\frac{2.36+2.14}{[\frac{2.32}{2.31}]^{1.39}}]^{\frac{1}{2}} = 2.12$$

$$P'' = \frac{\{[\frac{2.36}{2.32}]+[\frac{2.14}{2.31}]\ \}^{\frac{1}{2}}}{1.39} = 1.00$$

$$P = [\frac{2.12}{1.00}] = 2.12$$

$$R_P: \frac{2.12+1.00}{2} = 1.56$$

Substituting the values in the equation we can get the profits of the period:

$$Z_L = jwL\frac{1}{jwC}\,Re\ (w)\ +\ jwLRe\ (w) - \frac{1}{jwC}$$

$$PM = \left[\frac{\lim 2.30}{\int_{3.93}^{2.30} x} + \frac{\lim 2.32}{\int_{2.87}^{2.32} y}\right]^{ln\frac{1.71}{1.56}+[\frac{log2.30}{log2.32}]^{1.56}+\{\frac{1.71}{1.56}]^{2.30-2.32}} \left[\frac{sen2.30 -}{\{\frac{2.13}{}}\right.$$

$$\left. + \frac{sen2.32+cos2.32}{\{\frac{2.13}{}\}_{3.93}^{2.32}}\right]^{\ln\left(\frac{1.71}{1.56}\right)+[\frac{0.36}{0.36}]^{1.56}+[\frac{1.71}{1.56}]^{0.32}} \qquad [\frac{0.64}{2.83}+\frac{0.99}{2.75}]^{2.11}$$

$$= [0.58]^{2.11} = 0.34$$

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The profits of one company directly affected by the depreciation of its assets, by that his value is recognized as an expense companies do, even though not necessarily an outlay monetary. (*Samaniego, P. Á., Castro, L. R., & Vega, E. G. C. (2015).).*As a result for the first method, the station "EL Puerto de Liverpool" has a sales level of 0.34% at January 25th and a higher level of purchases of 1.56% which indicates a price of 99 cents per share and we allow a prediction model. These numbers can help to all the economist learn and predict the movements in the market data.

Fibonacci

Fibonacci was the first to develop present value analysis for comparing the economic value of alternative contractual cash flows. According to MSCI World Market, Fibonacci Retracement long term analysis asserts that global financial markets are currently in a bullish trend (*Glasgow, S. M., & Courter, J. R. A*).With the data got from Miller (data past and post for Call, Put and Price) we make a substitution in the Fibonacci equation, this action will determinate a new figure to compare and make a trust forecast

Log $r(N)=\log(1/N^{1/D})=-(\log N)/D \quad L_0 \lim_{n\to\infty} \frac{4^n}{3} = \infty \frac{logN}{log\frac{1}{r}} \lim_{n\to\infty} (\frac{\log(3.4^{n-1})}{\log(3^n)}) = \sqrt{l^2} - \left(\frac{1}{2}\right)^2 = \sqrt{l^2} - \frac{l^2}{4} = \sqrt{\frac{3}{4}l^2} = \frac{1\sqrt{3}}{2}$

$A_T = A + \sum_{n=1}^{\infty} \left(\frac{4^{n-1}}{3^{2n-1}}\right) A$

$Fibonacci = \left[\frac{1+2.31+2.31}{3}; \frac{0.08+0.07+1}{3}; \frac{1+2.31+2.31}{3}; \frac{0.16+0.26+1}{3}\right]$
$\left[\frac{5.62}{3}; \frac{1.15}{3}; \frac{5.62}{3}; \frac{1.42}{3}\right] = 1.87+0.38+1.87+0.47$

After to determinate the for numbers results, we visualize values with the sum log and in. We choose to use the log-nonlinear model largely because it is consistent with the human capital theory where almost all empirical studies apply logarithm transformation to the dependent variable in modeling the wage or income generating process (*Chen, Z., & Lu, M. (2016)*), this will make easier to calculate and play with numbers, as a result we have an approximately data:

$A_2=\frac{3A_0}{4} - \frac{3A_0}{16} = \frac{9A_0}{16} = \frac{3^2}{4} A_0 \left(\frac{3}{4}\right)^{k+1} A_0 \lim_{k\to\infty} A_k = A_0 \lim_{k\to\infty} (\frac{3}{4})^{k+1} = \frac{logN}{\log\left(\frac{1}{r}\right)}$

$A_{k+1} = A_k - 3^k \frac{A_0}{4^{k+1}} = \frac{3^k}{4^k}A_0 - \frac{3^k}{4^{k+1}} A_0 = \frac{4(3^k)-3^k}{4^{k+1}} A_0$

$= \log 1.87 + \log 0.38 = -0.14$
$= \ln 1.87 + \ln 0.38 = -0.34$
$= \log 1.87 + \log 0.47 = -0.05$
$= \ln 1.87 + \ln 0.47 = -0.12$

$= \frac{-0.14-0.34}{2} = 0.24$
$= \frac{-0.05-0.12}{2} = 0.08$
$= -0.24 - 0.08 = -0.32 = |0.32|$

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In resume, students exploring the beauty of mathematical patterns that appear in nature, such as Fibonacci sequence, this offer the opportunity to study finance from an aesthetic perspective, (*Jansen, A., & Hohensee, C. (2016)),* so we can determining the method of Fibonacci, we found that the station is estimated to Liverpool the next 90 days will have an average gain of 32%, which maintains a trend within normal emission numbers.

Pivot

$$\frac{-2.31-2.31-2.31}{3} = |-1| = 1\,\frac{-2.31-2.31-2.31}{3} = |- $$
$$= 1\,\frac{(5.01-2.35)}{2} = 1.33$$

The Pivot calculator determine a security Price and value comparator for financial statistics, *(Lipper III, A. (2015)*, Pivot compares the numbers out of market up and down that can be possible in the stock models, this is a cubic data model for table comparative and the result is the market movements for resistance and support. *(Purvis, J. (2016).*).The numbers has a limit level in up and down, this numbers represent a tendency that gives the movements in the market prices, when the tenure is up, the highs and lows are getting higher, but if these maximums and minimums are lower each time, the trend is bearish. (*Mihai, A. M. (2016)),* in this theory, we can get the terms support and resistance, the first one (support) are the low prices or the minimum where can down the prices in the store market versus the resistance, this reflect the up level for the prices, in the follow table, we determine the numbers for Liverpool numbers,symmetric indefinite factorization generally requires pivoting to maintain stability.

Many pivot selection techniques have been proposed in a matrix is sparse, the choice of pivots also affects the sparsity of the resulting factors, which in turn affects the time needed to solve the linear system. (*Jetpipattanapong, D., & Srijuntongsiri, G. (2016)*).

$$P_1 = \frac{P_0}{4} = \frac{P_0}{2} \qquad \frac{P_{n-1}}{4} \rightarrow P_n = \frac{P_0}{(2)^n} \lim_{n\to\infty} P_n = \lim_{n\to\infty} (\frac{3}{2})^n = \infty \;\; k\,\frac{c}{f_n}\cos\left(\frac{\propto}{2}\right)\delta^n$$

This paper presents an analysis of the study variables such as gdp, employment levels, and the level of “El Puerto de Liverpool” and technology that will serve as the basis for stochastic modeling of production possibilities (*Ramos-Escamilla, M. (2015)*). In determining the method of Pivot, we found that the station is estimated to Liverpool the next 90 days will have an average gain of 32%, which maintains a trend within normal emission numbers.The initial aim of this case of study is to propose a hybrid method based on time series and learning automata based optimization for stock market forecasting. (*Talarposhti, F. M., Sadaei, H. J., Enayatifar, R., Guimarães, F. G., Mahmud, M., & Eslami, T. (2016)*). This model is taken from the principal market data on Table 1.1, some values are diferent in name but the representation is the value for calculus:

Maximum price represent the highest value for Liverpool Market shares, minimum price is the lowest one, Maximum price range is the average between Maximum price actual date and exactly one year ago, this is the same case for Minimum price range, the Stock Market.

Broadcasters log is referenced to “price-to-book” the value for the enterprise determinate by an analyzes the value creation of the companies that made up the sample of Prices and Quotations Index of the Mexican Stock Exchange (*Ramírez, M. L. G., Vega, E. G. C., & Pérez-Iñigo, J. M. M. (2015)*) and the share market log represents the value of the offer in the Stock Market.

The next table represents the final values after a substitution in variables equations, this are represents by a software that makes easier this calculate.

Z1	Z2	Z3	Z4	Z5
7.71	1.28	2.26	3.62	2.51
5.55	1.27	2.30	4.84	2.13
4.42	1.52	2.25	4.65	4.06
1.19	1.40	1.79	2.88	3.86
1.88	1.49	1.78	7.28	4.19
10.99	1.48	1.92	1.90	0.55
11.50	1.24	2.28	2.37	2.09
4.34	1.39	2.20	1.79	2.40
2.07	10.89	7.67	5.39	2.51
1.82	21.62	7.35	5.52	2.50
51.25	43.53	31.76	40.17	26.69

$$A_\infty = \lim_{n\to\infty} A_n = \frac{\sqrt{3}}{4^2} l_0^2 \lim_{n\to\infty} \sum_{k=1}^{n} \left(\frac{4}{3^2}\right)^k = \frac{4}{3^2}\frac{\sqrt{3}}{4^2} l_0^2 \lim_{n\to\infty} \sum_{k=0}^{n-1} \left(\frac{4}{3^2}\right)^k \quad \frac{4}{3^2}\frac{\sqrt{3}}{4^2} l_0^2 \frac{1}{1-\frac{4}{3^2}} = \frac{1}{5} \cdot \frac{\sqrt{3}}{4} l_0^2$$

$$\mathrm{SM} = \left[\frac{\mathrm{Av\ Z_1+Av\ Z_2+Av\ Z_3+Av\ Z_4+Av\ Z_5}}{50}\right]$$

Replacing the last line in the equation, we obtain that the station is estimated to Liverpool the next 90 days will have an average gain of 58%, this data represents a different value compare with the last three models, to use the Stock Market calculus, could be a risk factor for stock market forecasting, this should be a success model in case the tendency in the market according to Liverpool’s Core Business will be consistent this concept is in accordance with (*Gasca Zamora, J. (2015)*), where he mentions , the rapid expansion of these business forms circulation and consumption of goods and services has become part of new forms of companies that have developed greater technological, logistical and organizational advantages”, citing among other department stores to “El Puerto de Liverpool” as one of among the preferred malls.

$$A_2 = \frac{\sqrt{3}}{4} l_0^2 + 3\frac{\sqrt{3}}{4}\left(\frac{l_0}{3}\right)^2 + 3 \cdot 4\, \frac{\sqrt{3}}{4}\left(\frac{l_0}{3^2}\right)^2 \frac{\sqrt{3}}{4} l_0^2 + \sum_{k+1}^{n} 3 \cdot 4^{k-1} \frac{\sqrt{3}}{4}\left(\frac{l_0}{3^k}\right)^2 = \frac{\sqrt{3}}{4} l_0^2 \left[1 + \frac{3}{4}\sum_{k=1}^{n}\left(\frac{4}{3^2}\right)^k\right] \frac{\sqrt{3}}{4} l_0^2 \left[1 + \frac{1}{3}\sum_{k=0}^{n-1}\left(\frac{4}{3^2}\right)^k\right]$$

$$Stock = \left[\frac{51.25 + 43.53 + 31.76 + 40.17 + 26.69}{50}\right]$$

Carnot cycle

After reviewing the impact of financial cycles on fiscal positions, we offer a new tool to estimate cyclically adjusted balances, illustrate its performance, explore its strengths and weaknesses, and sketch out a way forward to measuring sustainability in a more holistic way (*Borio, C. E., Lombardi, M. J., & Zampolli, F. (2016)*), this method offers a warranty for minimum risk in a monatomic structure in the financal engeniering, we could obtaing, from the first matrix data, the value to calculate varables that could permit get extra value with a forecast result.

$$Stock = \left[\frac{51.25+43.53+31.76+40.17+26.69}{50}\right] = \ln 3.86 = 0.58 \quad 3$$

Puerto de Liverpool			
Range Min.	0.07	Range Max	0.17
Volume Min	2.30	Volume Max	2.31
GIS'F	0.99		
Volume C	0.61	Volume D	0.60
GIS'F B	0.98	GIS'F C	9.06
GIS'F D	9.09		
Max Ex Post	0.01	Min Ex Post	|4.87|
Max Ex Ante	|0.02|	Min Ex Ante	4.87

Market Acc Circ	|0.01|	Cost	0.004
Margin	0.004	Range	0.009
Carnot Volatility	|1.42|		

$$D = \lim_{n\to\infty} -\frac{\log(3\cdot 4^n)}{\log 3^{-n}} = \lim_{n\to\infty}\frac{\log 3 + n\log 4}{n\cdot\log 3} = \frac{\log 4}{\log 3} = \frac{(PUT + CALL)^{\frac{1}{2}}}{\left(\frac{VCALL - VPOST}{2}\right)^{\frac{3}{4}}}$$

Replacing the last line in the equation, we obtain a the highest value that the station Liverpool estimates for the next 90 days the result will have an average gain of 99% this is an unusual result and the recommendation is not to use this method when the numbers get from the Stock Market matrix are lowest to manage the

$$F\mu f:\lambda \rightarrow \int^{-2\lambda} \lambda \rightarrow f(xld\, m\lambda)\int I(F\,\mu_F)(\lambda)I^2\,d\upsilon(\lambda)(\mathbf{1} - \boldsymbol{\varepsilon} - \boldsymbol{\delta})^{\mathbf{2}} \leq \mu(A)v(B)If -{}_{\chi}Af\|\mu \leq € \, and\|Ff -{}_{\chi}BFf\|\mu$$

$$GISF = \frac{(2.30+2.32)^{1/2}}{\left(\frac{2.85-2.50}{2}\right)^{3/4}} = \frac{(4.34)^{1/2}}{(2.67)^{3/4}} = \frac{2.08}{2.09} = 0.99$$

By fractal objects you can represent phenomena of nature, economy and engineering, our calculus based on stories in The New Methodology representations and involved, arise measurements for the characterization of them (*Cajeli, D. D., Palacio, L. E., & Camacho, M. (2016)*).This kind of method in my opinion, is a part confinable in the store market analysis, the way and get variables from nature and calculus makes possible to do a better work.We can start explained about fractal objects, the market data is a best example for this, so we define a fractal geometric object is one that is characterized by self-similarity: their structure repeats itself at any scale (*Parejo, R. P. (2016)*). Apart from the analysis, the highlight of his input is the integration from four poles in geometric: North, South, East and West, every point and their value in the grades expression.

The values for this method are the next:

Fractal matrix		
N->	1.69	1°
E->	3.05	90°
S->	3.48	180°
O->	3.14	270°

$$L = X_r := \left\{ \sum_{x=0}^{n} R^{*k} l_k \in L \right\}$$

$$N^{-1} \sum_{b\in B} \mu\ o\sigma_b^{-1} \sum_{\lambda\in L} |\hat{\mu}(t-\lambda]^2, T \in \mathbb{R}^2$$

$$Fractal = \frac{[1(1.69)+(90(3.05))]^{\frac{3}{4}}}{[(3.48)-(270(3.14))]^{\frac{1}{2}}} \frac{[1(1.69)+(90(3.05))]^{\frac{3}{4}}}{[180(3.48)-(270(3.14))]^{\frac{1}{2}}} \frac{[1.69+274.50]^{\frac{3}{4}}}{[(626.40)-(847.40)]^{\frac{1}{2}}}$$

$$\frac{67.74}{38.39} = 1.76$$

Replacing the last line in the equation, we obtain a the highest value that the station Liverpool estimates for the next 90 days the result will have an average gain of 76% this is an unusual, the purpose of this study was to obtain preliminary evidence in the fields of corporate financial reporting and financial risk analysis on the relevance of applying the constructed law, areas demarcated according to the Mexico CNBV and other entries, (*Rehwinkel, A. (2016)*)

$$X_P := \left\{ \sum_{k=0}^{\infty} R^{*-k} l_k : l_k \in L \right\}$$

$$\left\{ \sum_{k=0}^{n} (r\ R^{*)}\ l_k : n \in \mathbb{m} l_k \in \right.$$

$$L(\triangle \cap \Omega), v(\triangle) := \sum_{k=0}^{\alpha} = o\mu 0(\triangle + k)$$

$$fractal = \left[\frac{1(\log(49.50)) + 90(\log(1445.75))}{180(\log(3078.37) + 270(\log(1382.22))} \right] = \frac{1(1.699) + 90(3.05)}{180(3.48) + 270(3.14)} = \frac{1.69 + 274.50}{626.40 + 847.40}$$

Conclusion

The high risk is a good position to make decision works, on this methods we can assume the enterprise will growth and could be efficient the nice panorama.

$$.99\ High \rightarrow \frac{log0.76}{ln0.58} = \frac{|0.11| + |0.54|}{2} = \frac{0.32 * 100}{100} = 32\%$$

The medium risk has a consideration to determinate some possibilities of growth, the consideration should help to reassure with the directors how this should convenient.

$$.66\ Medium \rightarrow \frac{log0.54}{ln0.36} = \frac{|0.26| + |1.02|}{2} = \frac{1.28 * 100}{100} = 28\%$$

On low risk is not recommendable to take a decision, the position y high and could not be a great position to analyses a store market.

$$.33\ Low \rightarrow \frac{log034}{ln0.32} = \frac{|0.46| + |1.13|}{2} = \frac{1.59 * 100}{100} = 59\%$$

References

Cabrera, A. (2015). Financial Engineering case study: Alcatel-Lucent, SA Mexican Capital Market (BMV). In *Tópicos Selectos de Economía: Volumen III*(pp. 165-181). ECORFAN.

Escamilla, M. R., & García, M. M. (2015). Tópicos Selectos de Economía: Volumen III.

Rios, I., Weintraub, A., & Wets, R. J. B. (2016). Building a stochastic programming model from scratch: a harvesting management example. *Quantitative Finance*, *16*(2), 189-199.

Samaniego, P. Á., Castro, L. R., & Vega, E. G. C. (2015). Cómo afecta a las empresas mexicanas la aplicación de la depreciación por componentes. *NovaRua*, *4*(8).

Glasgow, S. M., & Courter, J. R. A Fibonacci Recursive Compounded Model for the Clean Energy Economy.

Chen, Z., & Lu, M. (2016). Globalization and Regional Income Inequality in China. In *Toward Balanced Growth with Economic Agglomeration* (pp. 63-87). Springer Berlin Heidelberg.

Lipper III, A. (2015). U.S. Patent No. 7,487,122. Washington, DC: U.S. Patent and Trademark Office)

Jansen, A., & Hohensee, C. (2016). Why Teach Mathematics. *Exploring Teachers in Fiction and Film: Saviors, Scapegoats and Schoolmarms*, 90.

Purvis, J. (2016). Cubic data model based pivot tables

Mihai, A. M. (2016). Abertis Infraestructuras SA y su valor en bolsa. Análisis del mercado bursátil español y simulación de análisis en las decisiones de inversión en Abertis Infraestructuras SA.

Jetpipattanapong, D., & Srijuntongsiri, G. (2016). A New Pivot Selection Algorithm for Symmetric Indefinite Factorization Arising in Quadratic Programming with Block Constraint Matrices. *arXiv preprint arXiv:1601.05758*.

Ramos-Escamilla, M. (2015). Stochastic Frontier I & D of fractal dimensions for technological innovation. *arXiv preprint arXiv:1509.01212*.

Talarposhti, F. M., Sadaei, H. J., Enayatifar, R., Guimarães, F. G., Mahmud, M., & Eslami, T. (2016). Stock market forecasting by using a hybrid model of exponential fuzzy time series. *International Journal of Approximate Reasoning*,*70*, 79-98.

Ramírez, M. L. G., Vega, E. G. C., & Pérez-Iñigo, J. M. M. (2015). Análisis de la gestión y creación de valor de las emisoras que conformaron el Índice de Precios y Cotizaciones de la Bolsa Mexicana de Valores durante el periodo 2011-2013. *Análisis financiero*, (129), 36-46.

Gasca Zamora, J. (2015). Tensión en los modelos de comercio y consumo en la Ciudad de México a partir de la expansión de supermercados y plazas comerciales.

Borio, C. E., Lombardi, M. J., & Zampolli, F. (2016). Fiscal sustainability and the financial cycle.

Cajeli, D. D., Palacio, L. E., & Camacho, M. (2016). El análisis fractal: Una nueva herramienta para la investigación básica en ingeniería y otras disciplinas (Biología). *Ciencia e Ingeniería Neogranadina*, *9*, 9-12.

Parejo, R. P. (2016). Reseña de El lector ante la obra hipertextual, Antonio Mendoza Fillola y Celia Romea Castro (Coords.). Ed. Horsori. Barcelona. 2010. 185 páginas. ISBN: 9788496108943. *Tejuelo*, *11*(1), 182-187.

Rehwinkel, a. (2016), corporate financial risk analysis according to the constructed law: exploring the composition of liabilities to assets.

Ramos-Escamilla, M. (2015). Stochastic Frontier I & D of fractal dimensions for technological innovation. *arXiv preprint arXiv:1509.01212*.

Soto, P. F. S. (2015). Las" Pequeñas y Medianas empresas"(PyMe) y la tecnología de información. *Tópicos Selectos de Economía: Volumen III*, 16-26..

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Title

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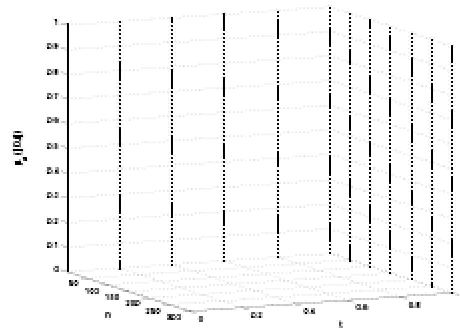

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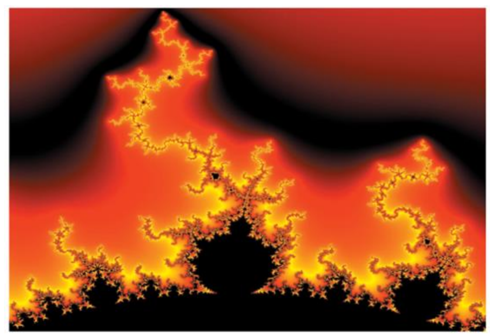

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