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

CALLETANO, Carlos Aguilar †

Universidad Iberoamericana

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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.

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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:

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

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

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

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

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

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

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:

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

$$PM = \left[\frac{\lim 2.30}{\int_{3.93}^{2.30} x} + \frac{\lim 2.32}{\int_{2.87}^{2.32} y}\right]^{ln\frac{1.71}{1.56}+[\frac{log 2.30}{log 2.32}]^{1.56}+\{\frac{1.71}{1.56}]^{2.30-2.32}} \left[\frac{sen 2.30 -}{\{\frac{2.13}{}} + \frac{sen 2.32 + cos 2.32}{\{\frac{2.13}{}\}_{3.93}^{2.32}}\right]^{\ln(\frac{1.71}{1.56})+[\frac{0.36}{0.36}]^{1.56}+[\frac{1.71}{1.56}]^{0.32}} \quad [\frac{0.64}{2.83}+\frac{0.99}{2.75}]^{2.11}$$

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

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

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

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

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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

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

$$\mathrm{SM} = \left[\frac{\mathrm{Av}\,\mathrm{Z}_1+\mathrm{Av}\,\mathrm{Z}_2+\mathrm{Av}\,\mathrm{Z}_3+\mathrm{Av}\,\mathrm{Z}_4+\mathrm{Av}\,\mathrm{Z}_5}{50}\right]$$

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

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

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

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°

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

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

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

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

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)*)

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

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

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

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

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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.

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

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