Calculation of price graphs reversal point, from average regression lines method

By Dr Abdul Rahim Wong, PhD

Key words: average regression, reverse regression, linear regression, regression analysis

[September 2023]

Abstract

Forecasting methods from averaging regression analysis lines, reversed and direct lines. With both lines intercepting laid the turning points in direction of original line. The average regression method.

Background

In order for any lines, two points or more in space are needed.
Methods:

Vectors

vector is a mathematical object that has both magnitude and direction. It can be used to represent physical quantities such as displacement, velocity, force, and acceleration. Vectors can be added, subtracted, multiplied by scalars, and have other operations defined on them. Vectors can also be represented by arrows, coordinates, or matrices.

Circular plots line graphs

plotting cyclic data series resulting from the combination of a measurement variable and a time-related numerical/continuous variable. It usually helps highlighting a cyclic pattern, a repetition or absence of repetition in time.

Linear regression

Linear regression is a statistical method that allows you to model the relationship between a dependent variable and one or more independent variables. It can help you understand how the dependent variable changes when the independent variables change, and also make predictions based on the data.

There are different types of linear regression, depending on how many independent variables you have and how they are related to the dependent variable. The simplest type is simple linear regression, which involves only one independent variable. The equation for simple linear regression is:

$y = mx + b$

where y is the dependent variable, x is the independent variable, m is the slope of the line, and b is the y-intercept of the line.

To perform a simple linear regression, you need to have data for both the dependent and independent variables. You can then use various methods, such as the least squares method, to find the best-fitting line that minimizes the sum of squared errors between the observed and predicted values of y. You can also calculate various statistics, such as the correlation coefficient, the coefficient of determination, and the standard error of the estimate, to measure how well the line fits the data and how strong the relationship is.

If you have more than one independent variable, you can use multiple linear regression, which involves a more complex equation:

$y = b0 + b1x1 + b2x2 + \ldots + bkxk$

where y is the dependent variable, x1, x2, …, xk are the independent variables, and b0, b1, b2, …, bk are the coefficients of the equation.

To perform a multiple linear regression, you need to have data for all the variables involved. You can then use various methods, such as matrix algebra or gradient descent, to find the best-fitting equation that minimizes the sum of squared errors between the observed and predicted values of y. You can also calculate various statistics, such as the adjusted coefficient of determination, the F-test, and the t-test, to measure how well the equation fits the data and how significant each independent variable is.

Linear regression is widely used in many fields of science, engineering, economics, and social sciences. It can help you explore the causal relationships between variables, test hypotheses, and make predictions based on data.

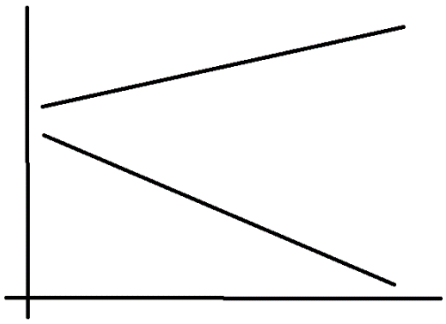
Averages in maths

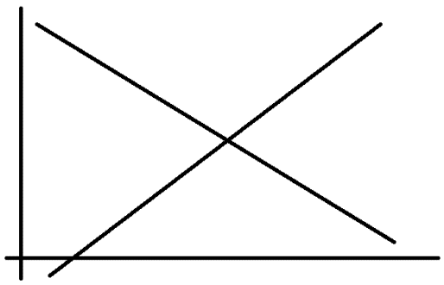
There are different types of averages, such as the mean, the median, the mode, and the mid-range. Each type of average has its own formula and purpose. For example, the mean is the sum of the numbers divided by how many numbers there are, and it is often used to measure the central tendency of a data set[12]. The median is the middle value that separates the higher and lower halves of a data set, and it is often used to measure the typical value of a skewed data set[2]. The mode is the most frequent value in a data set, and it is often used to measure the popularity or commonness of a data set[2]. The mid-range is the average of the highest and lowest values in a data set, and it is often used to measure the spread or variability of a data set[2]. Here the use of 2 sums divided by 2 is used in this paper.

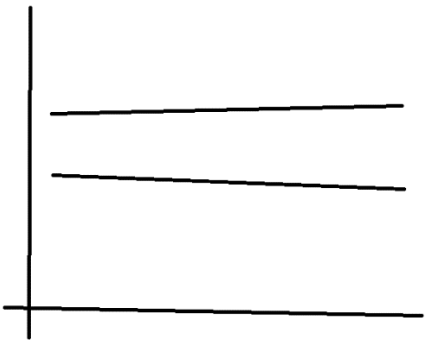
Method

1. Datasets
2. Plot in a line graph
3. Mid-point of consecutive points, one after the other
4. All mid points in reverse (If + all to -) vice versa.
5. Plot reversed line added to original line
6. Two lines intercept (The highest probability trend reveres point in time)

Three possible models from this method







<u>Conditions and characteristics</u>

More data from previous times, future intercept point shifts into future more accurate

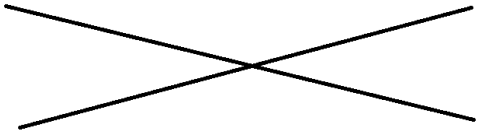
If not straight line(Absolute), nearest point in space of the line

Shifts intercept point in 3 directions

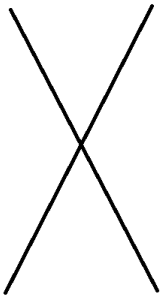
Blend line after sum of the two divided by 2, average out again, sum divided by 2 again and again to get straightest line

More data sets and data more accurate

Steepness of line

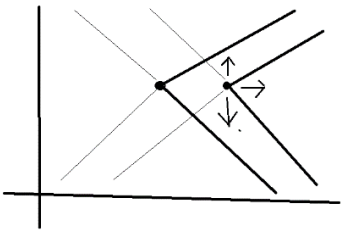


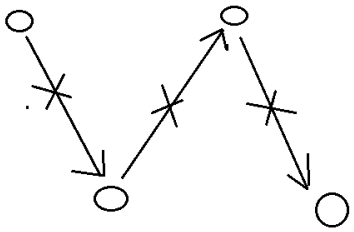
Stable, steady

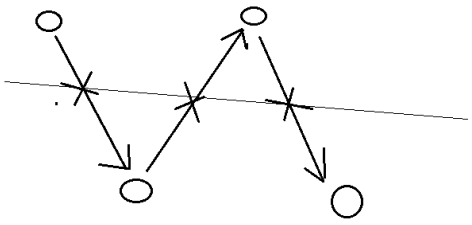


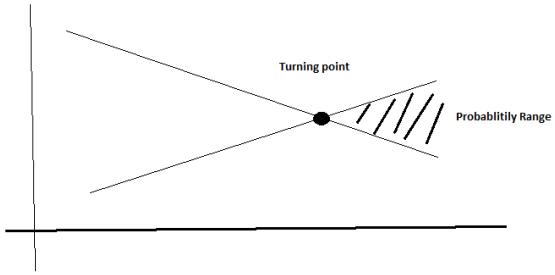
Non-Stable, more range, more exponential

Considerations

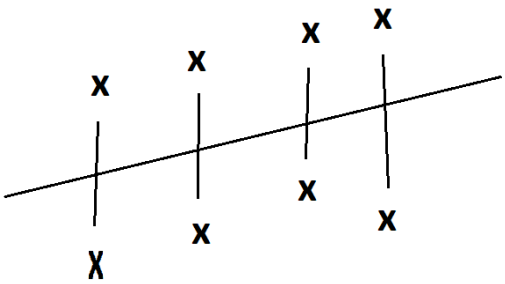




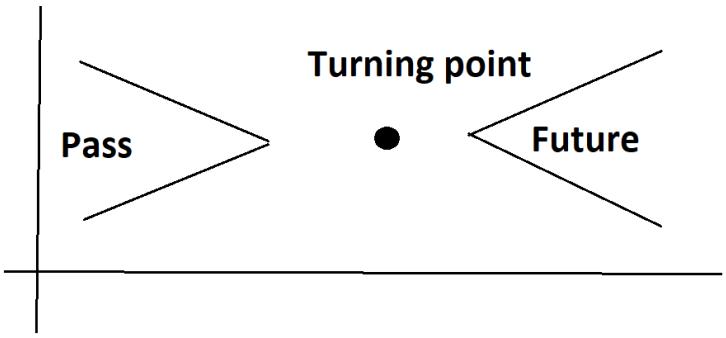




Future time stock price reversal point



Using regression lines methods



Notes

Using average regression method of two consecutive points, is closes to or new to statistical regression analysis branches.

Refrences

Forecasting: Methods and Applications 3rd Edition

by Spyros G. Makridakis (Author), Steven C. Wheelwright (Author), Rob J Hyndman (Author) ISBN-10 **0471532339** Publisher **Wiley** Publication date **December 1, 1997**