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Jaesang Lim*, Avon Old Farms School, and **Yeonoo Brian Chung**, Stevenson School. *Study on the Trend of Economic Indicators Using the Holt's Linearization Method and Distribution Method.*

To find the essential and underlying trend of an economic data, such as unemployment rate, multiple types of data and other indices need to be collected over time. Because these data sets display change as time progresses, time series analysis is necessary to be able to analyze such sequential data by using math, statistics, and computation. To distinguish the signal and the noise from each other, various linear and nonlinear smoothers must be applied.

In this paper, computational tools were used for the time series analysis. Since these data require proper statistical method in which the fitting model exactly matches the data, least squares method was used to minimize the sum of the squares of the deviations between the assumed model and the actual data.

For time series analysis and forecasting, this research used the a distribution method and the concept of return periods to map out how frequently certain data values appear. This paper also used Holt's linearization method to get a model of how the two sets of data change over time. The data for local unemployment rate had a Holt's linearization model that had better accuracy but had a theoretical return period evaluation that was relatively less accurate. (Received August 20, 2019)