

UTSA College of Business
Department of Management Science and Statistics
Research Seminar Series

March 29

“A Non-Parametric Way to Measure the Percentage of Smoothness in the Trend of a Univariate Time Series: An Application in a Time Series of Mexico’s GDP”

Daniela Cortes Toto

Departamento de Actuaría, Física y Matemáticas

Universidad de las Américas Puebla

Abstract

A smoothness index is presented that measures the amount of smoothness achieved when estimating trends in univariate time series where the noise follows an autoregressive process of order one. To achieve this, we fixed a priori the percentage of smoothness that one wishes to reach in the estimation of the trend (through the smoothness index) and then the trend is estimated using Penalized Least Squares in such a way that the index of smoothness fixed previously is satisfied. The application of the smoothness index is presented through an example of a time series of Mexico's GDP, in which the trend is estimated, reaching different percentages of smoothness, including the classic case in which the estimation of the trend is made using the Hodrick-Prescott Filter