Latest Release: SAS/ETS® 15.1

Econometrics and Time Series

Overview

SAS/ETS 15.1 introduces many new features, including a new interface access engine to retrieve data from the Organisation for Economic Co-operation and Development (OECD) website; additional support for Taylor and Chebyshev approximation techniques for spatial error and spatial Durbin error models, and Conditional forecasts and scenario analysis support for the vector autoregressive (VAR) model, Bayesian VAR model, vector error correction model (VECM), and Bayesian VECM.

SASEOECD Interface Access Engine

The SASEOECD interface access engine enables SAS® programmers to retrieve data from the OECD data website, hosted by the Organisation for Economic Co-operation and Development. This website offers access to statistical data on topics such as agriculture and fisheries, economy, education, employment, energy, environment, finance, and health. The website also offers access to the OECD.Stat data warehouse.

The SPATIALREG Procedure

The SPATIALREG procedure is a powerful tool for spatial econometric modeling of cross-sectional spatial data.

Figure 1: Population Growth Rate for Texas Counties

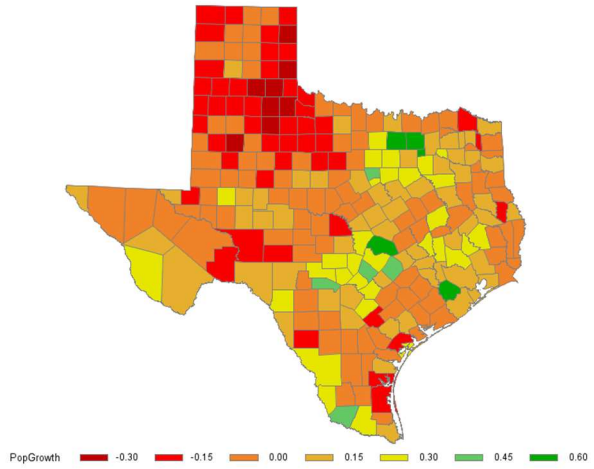

Figure 1 shows a population growth rate in Texas by using county-level data. According to this map, counties in one geographic region tend to show similar population growth compared to counties in different geographical regions. This is important because ignorance of spatial dependence and heterogeneity could lead to biased or inefficient parameter estimates or flawed inference. The SPATIALREG procedure supports the following models: spatial autoregressive (SAR), spatial Durbin (SDM), spatial error (SEM), spatial Durbin error (SDEM), spatial moving average (SMA), spatial Durbin moving average (SDMA), spatial autoregressive moving average (SARMA), spatial Durbin autoregressive moving average (SDARMA), spatial autoregressive confused (SAC), spatial Durbin autoregressive confused (SDAC), linear, and linear with spatial lag of X (SLX) models. The latest enhancments include support for Taylor and Chebyshev approximation techniques for spatial error and spatial Durbin error models.

Enhancements to PANEL Procedure

The PANEL procedure includes these five main enhancements:

- dynamic panel estimation using the generalized method of moments (GMM)
- Hausman-Taylor and Amemiya-MaCurdy estimators
- random-effects estimation in models where some variables are correlated with individual effects
- support for between and pooled estimation
- variance components estimation for both balanced and unbalanced panels using the methods described by Fuller and Battese (1974), Wansbeek and Kapteyn (1989), Wallace and Hussain (1969), and Nerlove (1971)

Enhancements to SSM Procedure

The main enhancements to the SSM procedure enable you to do the following:

- marginal likelihood based parameter estimation
- analyze general linear state space models
- estimate unknown model parameters by (restricted) maximum likelihood
- print or output to a data set the series forecasts, residuals, and full-sample estimates of any linear combination of the underlying state variables
- generate residual diagnostic plots and plots useful for detecting structural breaks

Latest Release: SAS® Econometrics 8.5

SAS® Cloud Analytic Services: Econometrics and Time Series

Overview

SAS Econometrics procedures, which run on SAS® Viya®, provide a new, resilient, distributed, and scriptable method of conducting advanced econometric modeling and time series analysis. They also provide a programming entry point for econometricians in government, academics, and industry (especially banking, insurance, and other financial services). SAS Econometrics leverages the speed, scalability, and elasticity of the SAS in-memory environment. Key features include:

- compound distribution models
- copula model fitting and simulations
- count and limited dependant variable models
- data access engine
- economic capital models
- hidden Markov models
- panel data models
- severity models
- spatial regression models
- time series models, analysis, and utility packages

New SASEMOOD Interface Access Engine

The SASEMOOD interface engine enables SAS users to retrieve time series data from the Moody's Analytics Data Buffet (Economy.com) website. This website offers access to over 600 sources of global historical statistical data at the regional, national, and subnational level, in addition to 40 forecast database offerings. Over 220 million time series are updated promptly after release, on topics such as housing, labor, demographics, finance, industry, housing prices, and consumer credit performance forecasts. Time series are offered in yearly, semiannual, quarterly, monthly, semimonthly, biweekly, weekly, workday (business), daily, and indexed frequencies.

New TSINFO Procedure

The TSINFO procedure evaluates a variable in an input data table for its suitability as a time ID variable in SAS procedures and solutions that are used for time series analysis. PROC TSINFO assesses how well a time interval specification fits SAS date values, SAS datetime values, or observation numbers that are used to index a time series. The time interval used in this analysis can be either specified explicitly as input or inferred based on values of the time ID variable. The TSINFO procedure produces diagnostic information in the form of data tables and ODS tables. These diagnostic results summarize characteristics of the time ID variable that can help determine its use as an index in other time series procedures and solutions.

The HMM Procedure

The HMM procedure estimates hidden Markov models (HMMs), which have been widely applied in economics, finance, science, and engineering. This model has many well-known aliases, such as the general state space model, regime-switching model, Markov-switching model, Markov regime-switching model, and so on. PROC HMM estimates the Gaussian HMM, Gaussian mixture HMM, regression HMM, and autoregressive HMMs in both standard and mean-adjusted forms. PROC HMM includes these features:

- support for cross-sectional time series
- estimation by the maximum likelihood method and the maximum a posteriori method
- various nonlinear optimization algorithms and stochastic gradient descent algorithm
- specification of initial parameter values and prior hyperparameter values
- multiple starting points for optimization
- state-independent constraints on parameters
- statements for obtaining filtering, smoothing, decoding, and forecasting results
- multistep forecasts after each observation
- the analytic store technology (ASTORE). You can even apply HMMs to new data on a platform that does not support the HMM procedure. For example, you can use the HMM ASTORE in the SAS Event Stream Processing Studio.

For More Information

For more information, ask your organization's SAS representative to contact SAS at 1.800.727.0025.