Time Series Forecasting: How Much Prologue is the Past?

Dr. Philip A. Rothman

Department of Economics, East Carolina University

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2013 ECU Scholar-Teacher Awards and Symposium
“I would not wish the task of a macroeconomic time-series
econometrician on a mangy dog. Especially not now.”

Brad Delong, October 2008

“With four parameters I can fit an elephant, and with five I can
make him wiggle his trunk.”

John von Neumann
Real GDP and Trend Growth: 1990Q1-2012Q4

Gap = $2.7 trillion
Returning to Trend? By 2020? Shift to Lower Trend?

Real GDP and Trend Growth: 1990Q1-2012Q4

Gap = $2.7 trillion

Dr. Philip A. Rothman
Scholar-Teacher Award Presentation
A Check on Overfitting

- Carry out an “out-of-sample” (OOS) forecasting experiment:

  - Idea is to mimic what would have happened if, over time, a researcher had used a particular technique to produce forecast values for an economic variable of interest, e.g., real GDP.

  - Only information that would have been available at a particular point in time is used to make the forecast.

    ▶ For example, in trying to mimic producing a forecast for the first quarter of 2013, only information that would have been known as of the fourth quarter of 2012 would be used.

  - Since “future” values are known when doing the experiment, accuracy of mimicked forecasts can be evaluated.
Patterns from the Past: 1980Q1-2007Q3

Real GDP and Trend Growth: 1980Q1-2007Q3

- Long-Run Trend
- GDP
A Check on Overfitting

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Forecasting Asymmetric Unemployment Rates
Philip Rothman
East Carolina University
MULTIVARIATE STAR ANALYSIS OF MONEY-OUTPUT RELATIONSHIP

Philip Rothman
East Carolina University

Dick van Dijk and Philip Hans Franses
Econometric Institute
and
Erasmus University Rotterdam
Out-of-sample forecasting of unemployment rates with pooled STVECM forecasts

Costas Milas\textsuperscript{a} \textsuperscript{b}, \textsuperscript{c}, Phillip Rothman\textsuperscript{a} \textsuperscript{c}

\textsuperscript{a} Department of Economics, Keele University, Keele, ST5 5BG, UK
\textsuperscript{b} Rimini Centre for Economic Analysis, Via Patara, 3, 47900 Rimini (RN), Italy
\textsuperscript{c} Department of Economics, Brewster Building, East Carolina University, Greenville, NC 27858, USA
Oil and U.S. GDP: A Real-Time Out-of-Sample Examination

FRANCESCO RAVAZZOLO, PHILIP ROTHMAN

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Journal of Money, Credit and Banking
Economics 6390: Research Paper

Dr. Philip Rothman  
Office: Brewster A-424  
Phone: 328-6151  
Email: rothman@ecu.edu

Your paper will be based on a pseudo out-of-sample forecasting exercise for the time series you have been assigned.

Consider two scenarios:

A. Set the first in-sample period to 1947:Q2-1989:Q4, the second in-sample period to 1947:Q2-1990:Q1, \ldots, with the last in-sample period 1947:Q2-2010:Q4. Compute forecasts for $h = 1, 2, 3,$ and $4$. In this scenario, the ‘Great Recession’ is included.

B. Set the first in-sample period to 1947:Q2-1989:Q4, the second in-sample period to 1947:Q2-1990:Q1, \ldots, with the last in-sample period 1947:Q2-2006:Q4. Compute forecasts for $h = 1, 2, 3,$ and $4$. In this scenario, the ‘Great Recession’ is not included.
An empirical investigation of stock market behavior in the Middle East and North Africa

Al-Ru Cheng\textsuperscript{a, 1}, Mohammad R. Jahan-Parv\textsuperscript{a}, Philip Rothman\textsuperscript{b}

\textsuperscript{a} University of California, Santa Cruz, USA
\textsuperscript{b} East Carolina University, USA
Economics 3343: Course Project

Dr. Philip Rothman  
Office: Brewster A-424  
Phone: 328-6151  
Email: rothmang@ecu.edu

Due date/time: Thursday, May 9, 8am. A hard copy of the paper needs to be submitted upon your arrival for the Final Exam.

Topical Focus

Your project will be based upon analysis of a set of estimated regression models motivated by what is known as the Capital Asset Pricing Model (CAPM). I have provided a Brief Introduction to the CAPM and Factor Models, with an emphasis on some key econometric issues; you are STRONGLY ENCOURAGED to read through and ‘digest’ that material ASAP. The remainder of this document assumes you indeed are sufficiently familiar/comfortable with that material.
An empirical investigation of stock market behavior in the Middle East and North Africa

Al-Ru Cheng¹, Mohammad R. Jahan-Parvar², Philip Rothman²

¹ University of California, Santa Cruz, USA
² East Carolina University, USA
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I have carried out and published many OOS forecasting studies:

- In our MS program’s capstone research course, I lead my students through such exercises.

I have published CAPM research:

- The research project in Economics 3343 (WI), which most of our majors take, is based on the CAPM.