Time Series Forecasting: How Much Prologue is the Past?

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2013 ECU Scholar-Teacher Awards and Symposium

Preamble

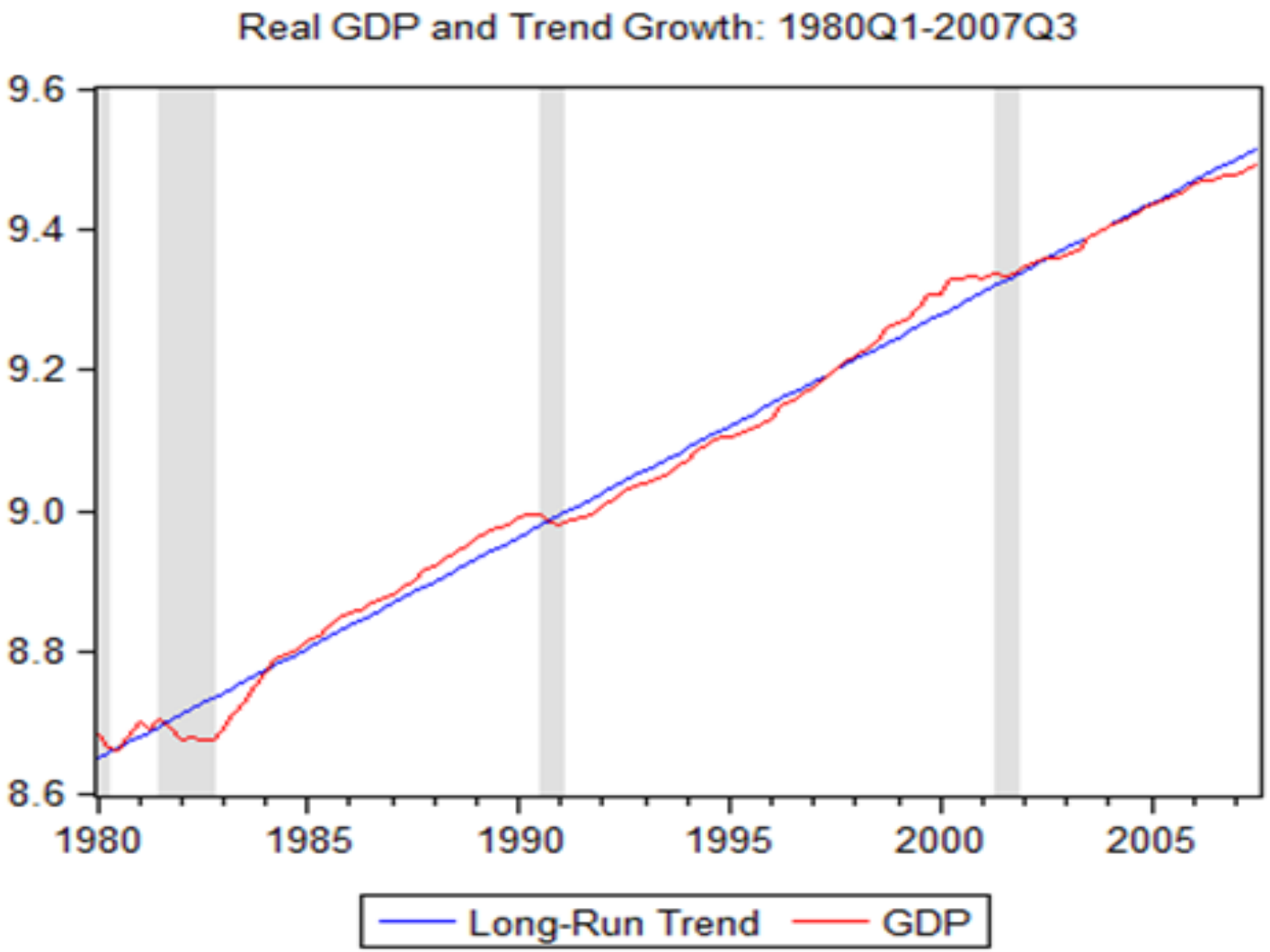
"I would not wish the task of a macroeconomic time-series econometrician on a mangy dog. Especially not now."

Brad Delong, October 2008

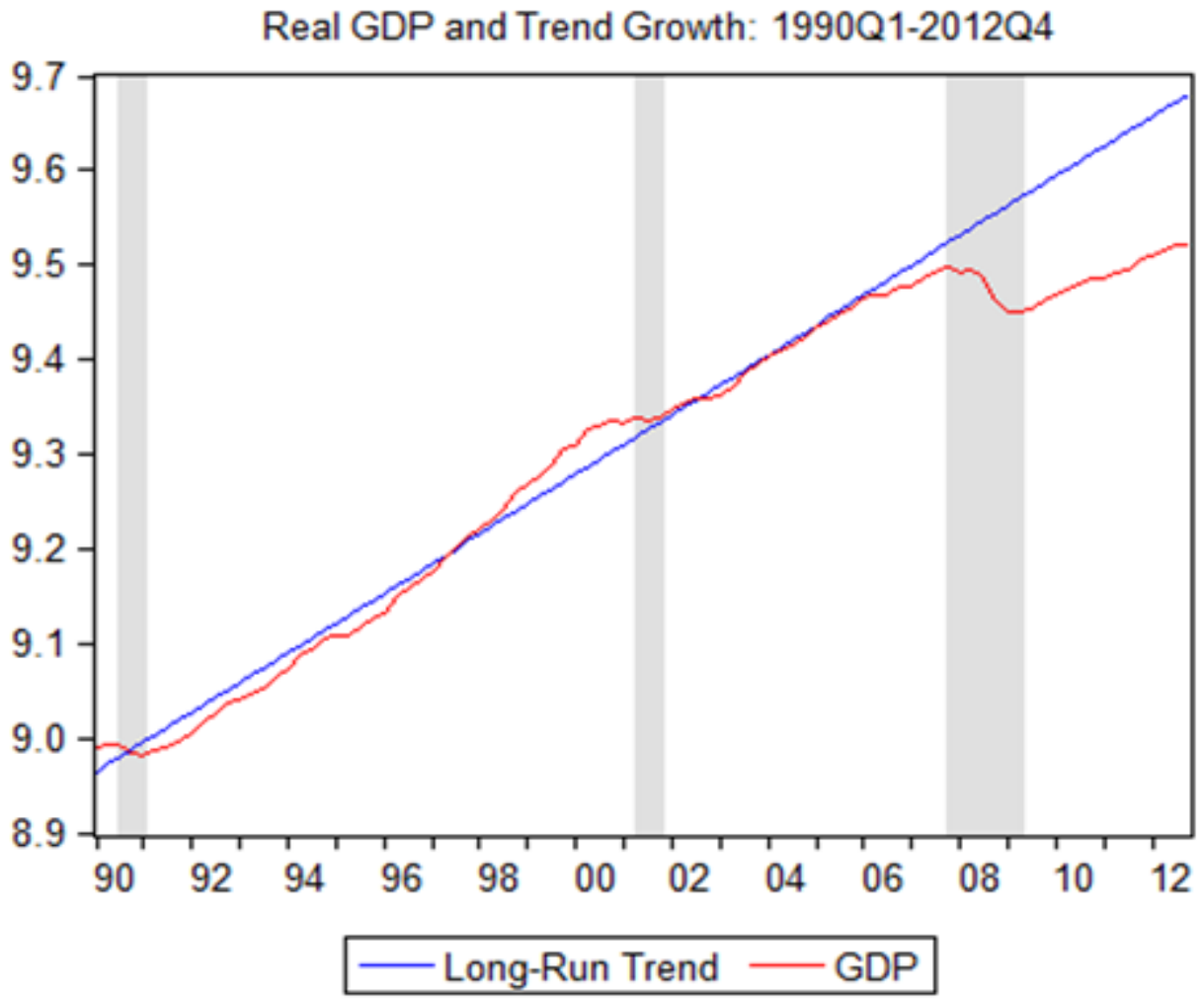
"With four parameters I can fit an elephant, and with five I can make him wiggle his trunk."

John von Neumann

Patterns from the Past: 1980Q1-2007Q3



Returning to Trend? By 2020? Shift to Lower Trend?



Gap = $2.7 trillion

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.

Some of My OOS Forecasting Papers

The Review of Economics and Statistics

February 1998, Vol. 80, No. 1, Pages 164-168
Posted Online March 13, 2006.
(doi:10.1162/003465398557276)

Forecasting Asymmetric Unemployment Rates

Philip Rothman
East Carolina University

Some of My OOS Forecasting Papers

Macroeconomic Dynamics, **5**, 2001, 506–532. Printed in the United States of America.
DOI: 10.1017.S1365100500000444

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

Some of My OOS Forecasting Papers

ELSEVIER

International Journal of Forecasting

Volume 24, Issue 1, January–March 2008, Pages 101–121

Out-of-sample forecasting of unemployment rates with pooled STVECM forecasts

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Some of My OOS Forecasting Papers

Oil and U.S. GDP: A Real-Time Out-of-Sample Examination

FRANCESCO RAVAZZOLO, PHILIP ROTHMAN

Article first published online: 17 MAR 2013

DOI: 10.1111/jmcb.12009

Issue

Journal of Money, Credit and Banking

Volume 45, Issue 2-3, pages 449–463, March-April 2013

Economics 6390: Research Paper

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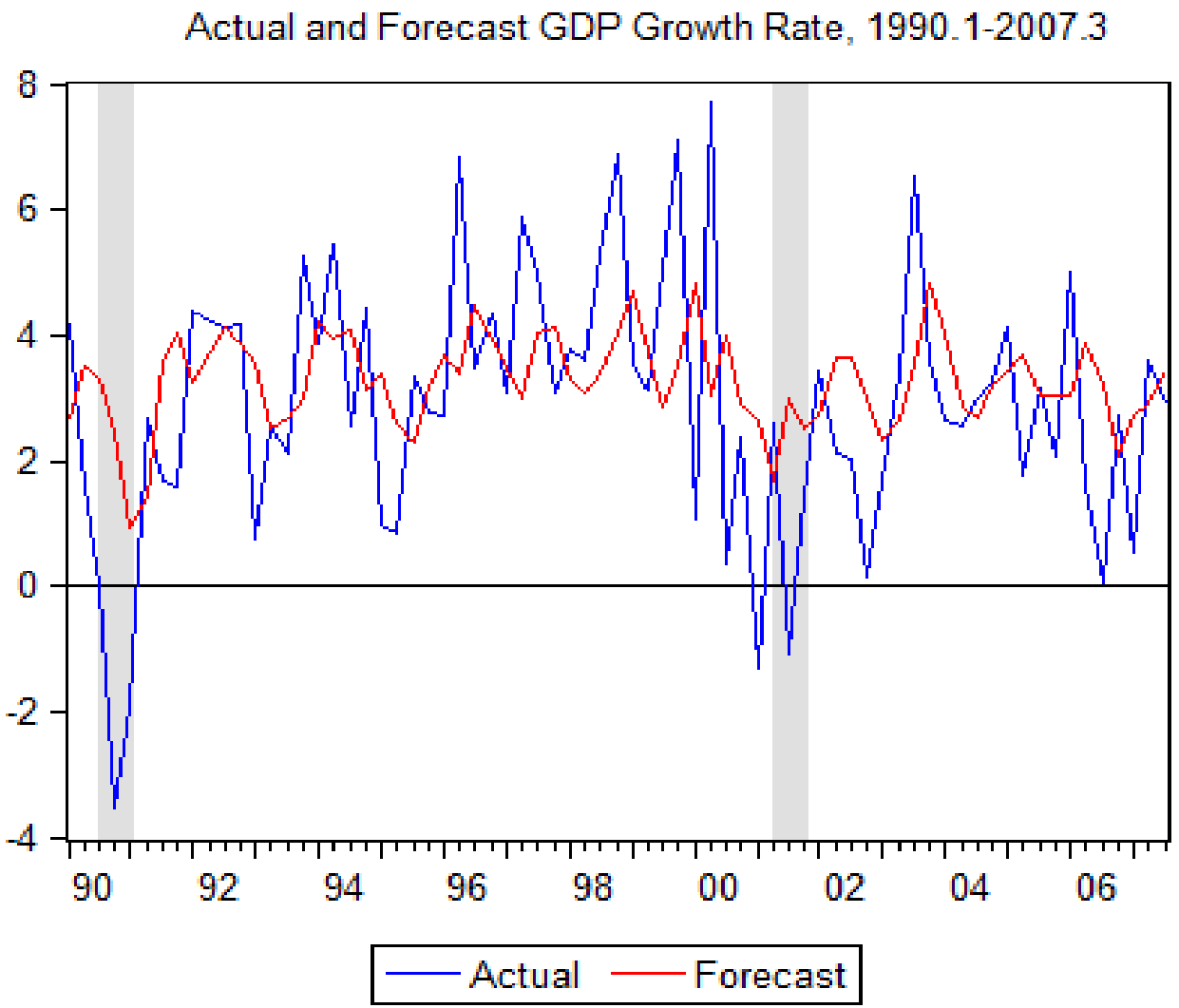
Your paper will be based on a pseudo out-of-sample forecasting exercise for the time series you have been assigned.

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, ..., 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, ..., 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.


Actual and Forecast GDP Growth Rate, 1990.1-2007.3
8
6
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-4
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92
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96
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02
04
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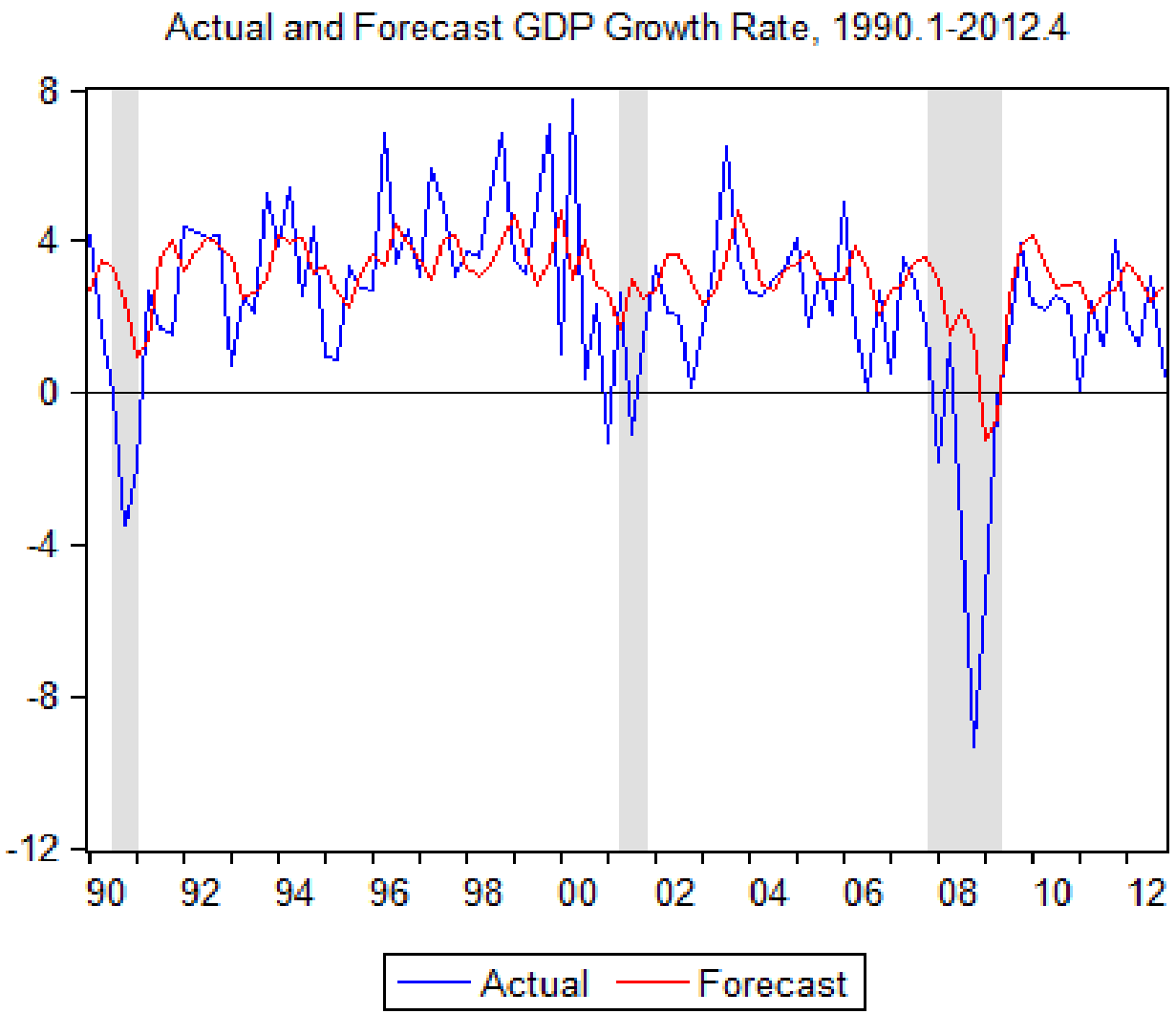
Actual
Forecast


Actual and Forecast GDP Growth Rate, 1990.1-2012.4
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-12
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02
04
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12
Actual
Forecast

CAPM Paper

ELSEVIER

Journal of Empirical Finance

Volume 17, Issue 3, June 2010, Pages 413–427

An empirical investigation of stock market behavior in the Middle East and North Africa

Ai-Ru Cheng[a, 1], Mohammad R. Jahan-Parvar[b, 2], Philip Rothman[b]

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Economics 3343: Course Project

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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.

Integrating Research into Teaching

- 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.