

Forecasting Mortality: The Time Series v. Penalty Debate

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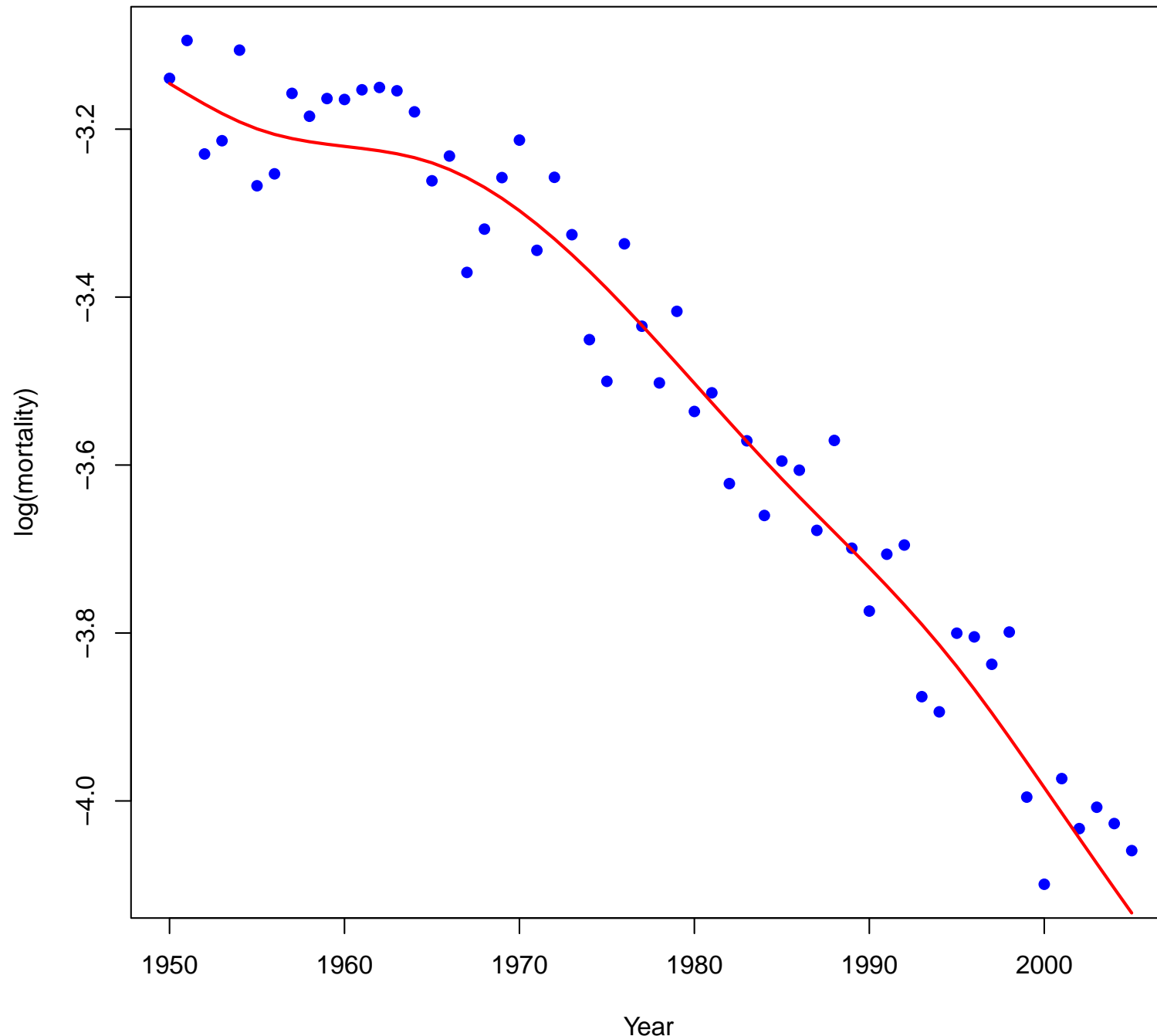
The Time Series v Penalty Debate

Data: CMI data for age 70 from 1950 - 2005.

Question: What do we expect to see in 2006?

- Time series: start at the observed value in 2005.
- Penalty: start at the trend value in 2005.

Log(mortality) for CMI data age 70



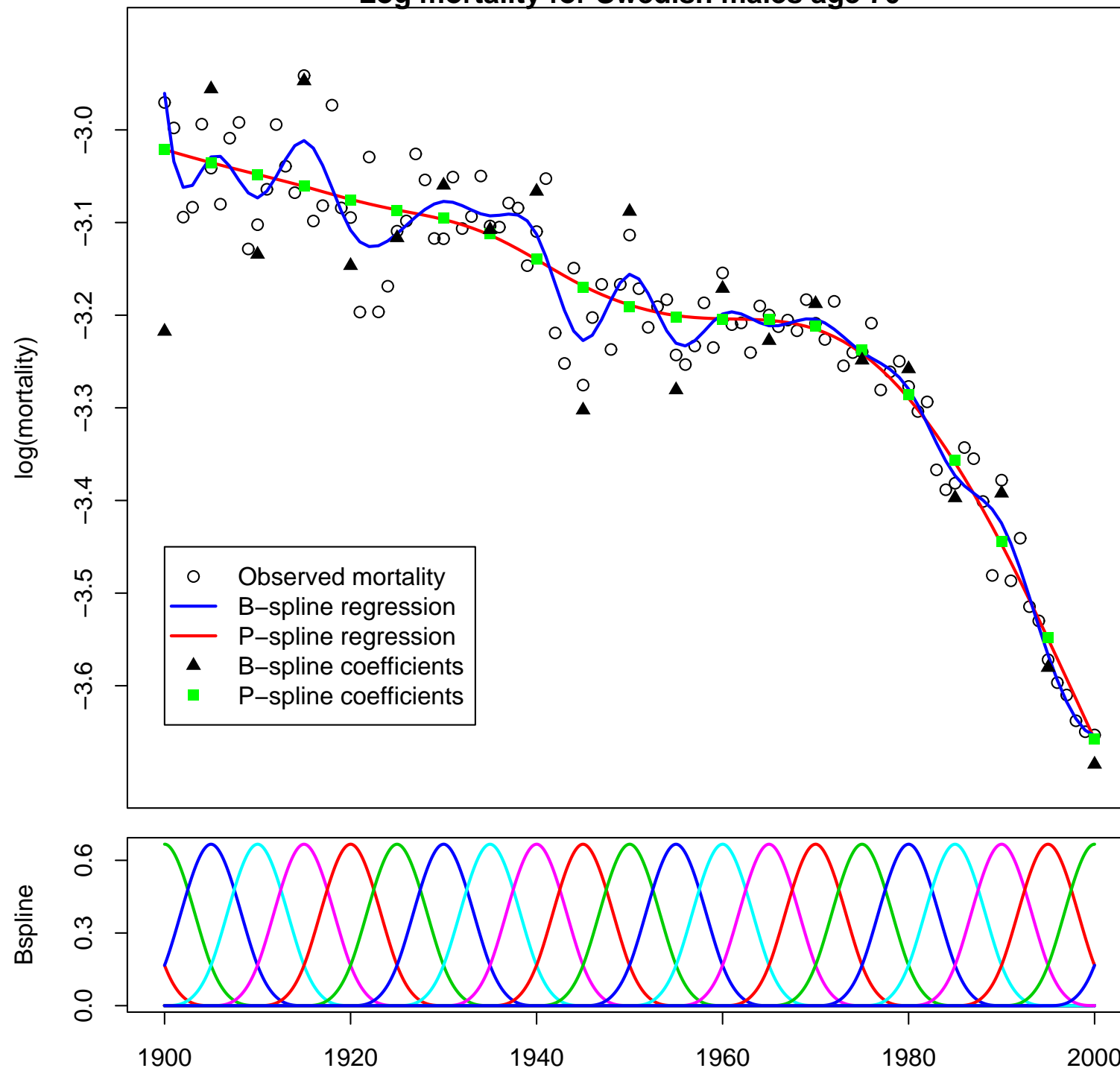
Example: Time Series

Forecast: random walk with drift

$$\hat{y}_{2006} = y_{2005} + \hat{a} + \varepsilon$$

where \hat{a} is the estimated drift (average decline per year).

Log mortality for Swedish males age 70



Example: Penalty

Forecast: 2nd order penalty \Rightarrow linear forecast of last two coefficients.

$$\hat{y}_{2006} = \hat{y}_{2005} + \hat{a} + \varepsilon$$

where \hat{a} is the one-year linear increment in the penalty forecast.