

5. Estimate the first order moving average model $\Delta_t = \alpha + \beta e_{t-1} + e_t$, where e_t denotes the forecast error for month t . The forecast error is simply the difference between the one-month ahead forecast and the actual realization of Δ_t . The forecast error is expressed as $e_t = \Delta_t - \beta e_{t-1}$. The model can be estimated using standard commercially available software such as SAS or Eviews. Using least squares, the estimated parameter values are $\alpha=0.01048$ and $\beta=-0.76442$.

6. For the month of April 2003, forecast $\Delta_{t=4/03} = \alpha + \beta e_{t=3/03}$. For all subsequent months, forecast $\Delta_t = \alpha$.

7. Calculate forecasts of $\log(\text{AAMOP})$. For example, the forecast of $\log(\text{AAMOP})$ for June 2002 is given by FLAAMOP

$$_{t=6/02} = \log(\text{AAMOP}_{t=3/02}) + \Delta_{t=4/02} + \Delta_{t=5/02} + \Delta_{t=6/02}$$

8. Under the assumption that e_t is normally distributed, the n -step ahead forecast of AAMOP is given by $\exp(\text{FLAAMOP}_t + \sigma_n^2/2)$, where σ_n denotes the standard error of the n -step ahead forecast.

9. For June 2003, this gives a forecast AAMOP of \$12.8 Billion (Column I), and a forecast AMOP of \$269.5 Billion (Column J).

10. Iterate this process through September 2004 to obtain a baseline estimate of the

aggregate maximum offering prices for fiscal year 2004 of \$3,684,909,630,358.

B. Using the Forecasts From A to Calculate the New Fee Rate

1. Using the data from Table A, estimate the aggregate maximum offering prices between 10/1/03 and 9/30/04 to be \$3,684,909,630,358.

2. The rate necessary to collect the target \$467,000,000 in fee revenues set by Congress is then calculated as: $\$467,000,000 \div \$3,684,909,630,358 = 0.00012670$ (or \$126.70 per million).