

## TS Module 19 Seasonal models basics

(The attached PDF file has better formatting.)

- Seasonal ARIMA models
- Multiplicative seasonal ARIMA models

Read Section 10.1, “Seasonal ARIMA models,” on pages 228-229. The seasonal moving average process has the same form as the basic moving average process. Distinguish between the non-seasonal  $\theta$  and the seasonal  $\Theta$ . In the next section, both parameters are used; don’t confuse them.

Read Section 10.2, “Multiplicative seasonal ARIMA models,” on pages 229-232. Know equations 10.2.2, 10.2.3, and 10.2.4 at the bottom on page 230 and equation 10.2.5 at the top of page 231. Spend a few minutes to derive each equation; they follow the same pattern as the equations for other moving average models.

Know equation 10.2.8 at the bottom of page 231 and equations 10.2.9, 10.2.10, and 10.2.11 at the top of page 232. These combine moving average and autoregressive terms.

Cryer and Chan do not illustrate an autoregressive seasonal model, with  $\Phi$  and  $\phi$ . This model is the most common in practice. The expressions for the autocorrelations are slightly more complex, since the autocorrelations have an exponential decay.