

## Bootstrapping ARIMA Models.

parametric bootstrap

arima(p,d,q), normal e's

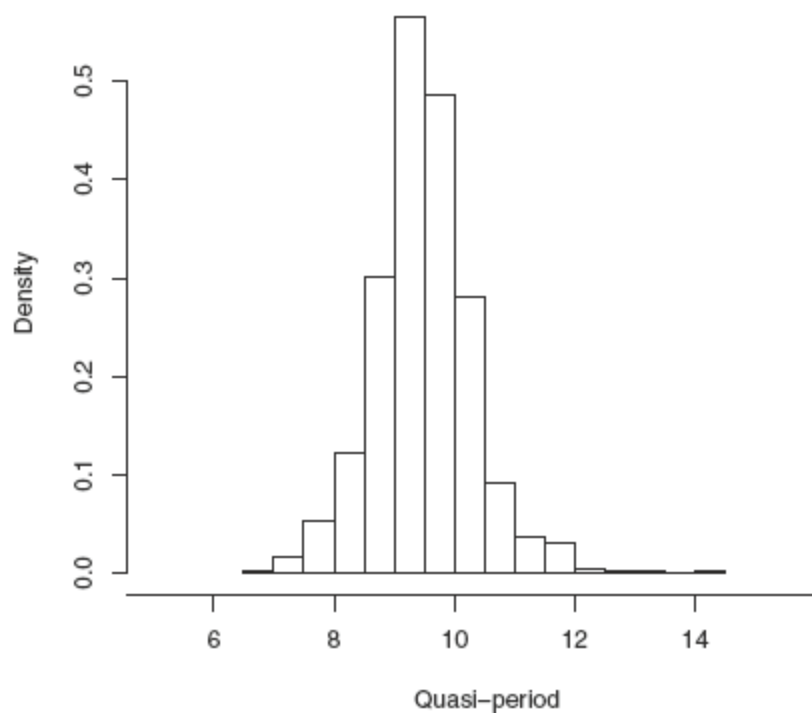
```
res=arima(sqrt(hare),order=c(3,0,0))  
  
set.seed(12345)  
  
coefm.cond.norm=arima.boot(res,cond.boot=T,is.normal=T,  
  B=1000,init=sqrt(hare))  
  
temp=apply(coefm.cond.norm,2,function(x)  
  {quantile(x,c(.025,.975),na.rm=T)})  
signif(temp,3)
```

**EXHIBIT 7.10 Bootstrap and Theoretical Confidence Intervals for the AR(3) Model Fitted to the Hare Data**

Method	ar1	ar2	ar3	intercept	noise var.
I	(0.593, 1.269)	(-0.655, 0.237)	(-0.666, -0.018)	(5.115, 6.394)	(0.551, 1.546)
II	(0.612, 1.296)	(-0.702, 0.243)	(-0.669, -0.026)	(5.004, 6.324)	(0.510, 1.510)
III	(0.699, 1.369)	(-0.746, 0.195)	(-0.666, -0.021)	(5.056, 6.379)	(0.499, 1.515)
IV	(0.674, 1.389)	(-0.769, 0.194)	(-0.665, -0.002)	(4.995, 6.312)	(0.477, 1.530)
Theoretical	(0.684, 1.42)	(-0.8058, 0.3474)	(-0.7684, -0.01776)	(5.032, 6.353)	(0.536, 1.597)

---

**Exhibit 7.11 Histogram of Bootstrap Quasi-period Estimates**



---

```
> win.graph(width=3.9,height=3.8,pointsize=8)
> hist(period.replace,prob=T,xlab='Quasi-period',axes=F,
      xlim=c(5,16))
> axis(2); axis(1,c(4,6,8,10,12,14,16),c(4,6,8,10,12,14,NA))
```

---