

STATS 531 HW 2

Elliott Evans

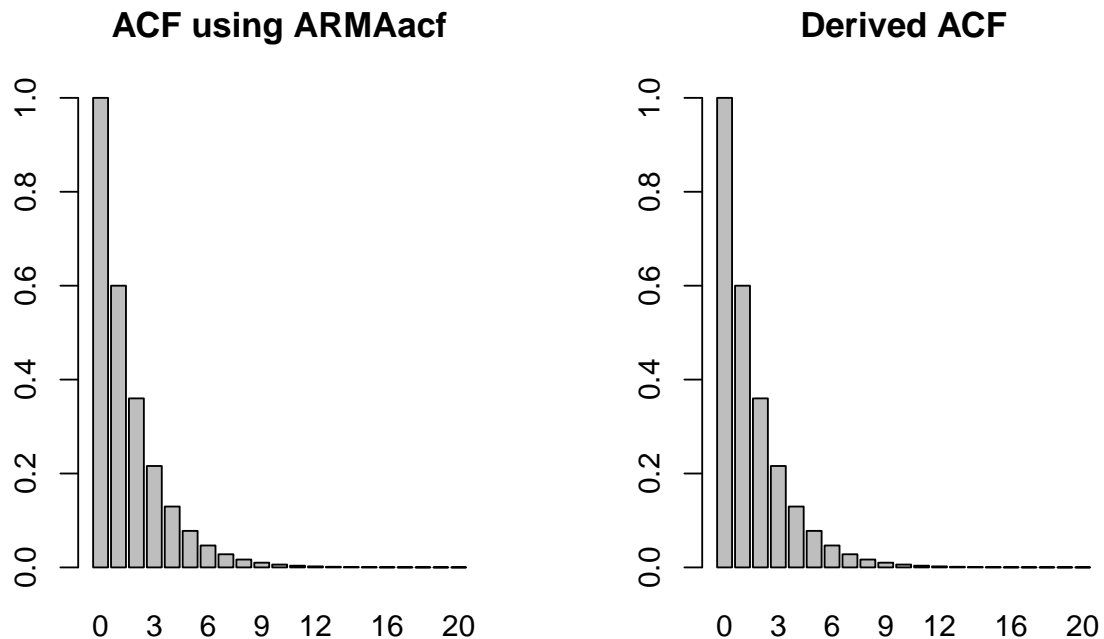
1/29/2018

Contents

Question 2.1	1
Sources	2
Please Explain	2

Question 2.1

```
set.seed(123456789)
par(mfrow=c(1,2))
barplot(ARMAacf(ar=c(0.6),lag.max=20),main='ACF using ARMAacf')
barplot(.6^(0:20), main='Derived ACF',names.arg=c(0:20))
```



```
#Number of autocorrelations that are different
num_diff = sum(round(ARMAacf(ar=c(0.6),lag.max=20),5) != round(.6^(0:20),5))
num_diff
```

```
## [1] 0
```

Sources

- 531W16 HW2 Solutions for 2.1 A & B used to check final answers. In addition, GSI Joonha Park helped elaborate on independence between ϵ_n and X_1, X_2, \dots, X_{n-1} .
- 531W16 HW2 Solutions for 2.2 used to check final answer.

Please Explain

- For problem 2.1 B, we use a Taylor expansion for the function $(1 - \phi B)^{-1}$. But isn't that only valid if $|\phi B| < 1$? I.e. doesn't this only work if we're guaranteed $|\phi B(X_i)| < 1$ for all i (where $B(\cdot)$ is the B operator applied to X_i)?