TS analysis

J

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数据导入及预处理

```
library(TSA) # 打开时间序列分析的 R 包
data <- read.csv("shuju.csv") # 从 shuju 中读入 R 环境，命名为 data 数据框
View(data) # 查看 data
for(i in 1:5){
  assign(paste0("var",i),log(ts(data[,i+1],star=1999)))
}
# 循环赋值，将 data 数据框中的五个变量的对数转化为 ts 格式，并进行重命名
```

平稳性分析

用 tseries 包的 adf.test 函数做假设检验，H_0: 序列不平稳。

```
library(tseries)
adf.test(var1)
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  var1
## Dickey-Fuller = 0.96324, Lag order = 2, p-value = 0.99
## alternative hypothesis: stationary
```

```
adf.test(var2)
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  var2
## Dickey-Fuller = -2.1699, Lag order = 2, p-value = 0.5077
## alternative hypothesis: stationary
```

```
adf.test(var3)
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  var3
## Dickey-Fuller = -1.5828, Lag order = 2, p-value = 0.7313
## alternative hypothesis: stationary
```

```
adf.test(var4)
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  var4
## Dickey-Fuller = -2.7925, Lag order = 2, p-value = 0.2705
## alternative hypothesis: stationary
```

```
adf.test(var5)
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  var5
## Dickey-Fuller = -2.7228, Lag order = 2, p-value = 0.297
## alternative hypothesis: stationary
```

大于显著性水平，不能拒绝原假设。

```
adf.test(diff(var1,4))
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  diff(var1, 4)
## Dickey-Fuller = -1.627, Lag order = 2, p-value = 0.7145
## alternative hypothesis: stationary
```

```
adf.test(diff(var2,2))
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  diff(var2, 2)
## Dickey-Fuller = -1.8582, Lag order = 2, p-value = 0.6264
## alternative hypothesis: stationary
```

```
adf.test(diff(var3))
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  diff(var3)
## Dickey-Fuller = -2.4129, Lag order = 2, p-value = 0.4151
## alternative hypothesis: stationary
```

```
adf.test(diff(var4))
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  diff(var4)
## Dickey-Fuller = -2.5941, Lag order = 2, p-value = 0.346
## alternative hypothesis: stationary
```

```
adf.test(diff(var5))
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  diff(var5)
## Dickey-Fuller = -2.4404, Lag order = 2, p-value = 0.4046
## alternative hypothesis: stationary
```