

Code

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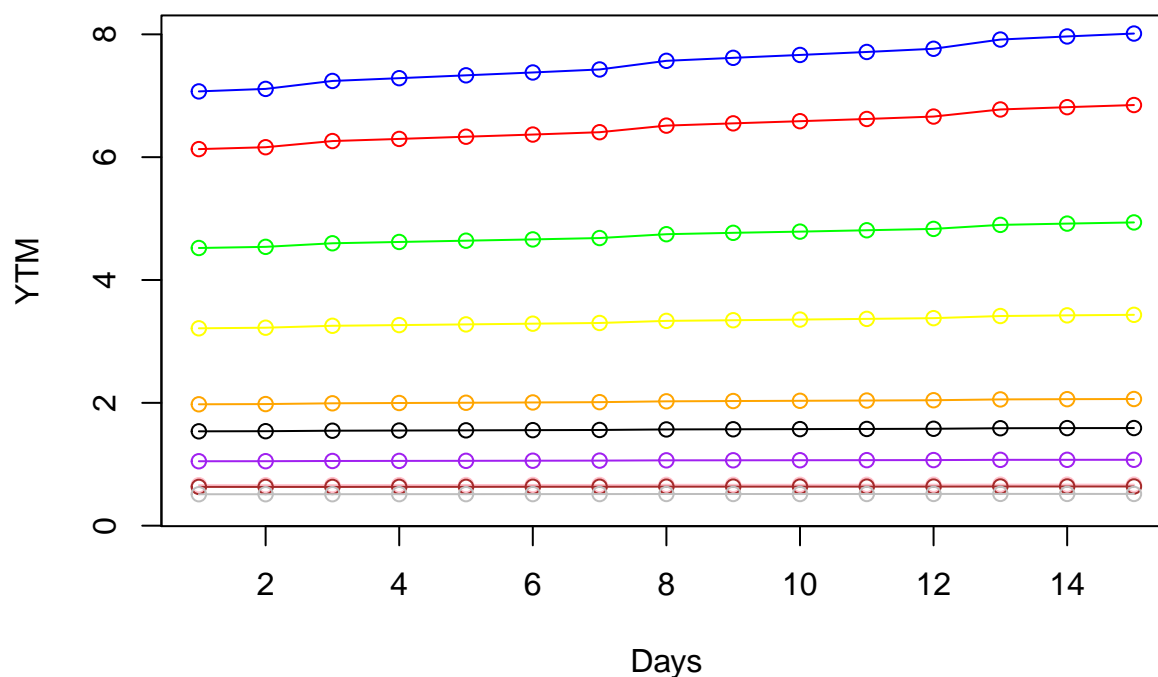
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```
d<- c(1,2,3,4,5,6,7,8,9,10,11,12,13,14,15)
B1<- c(6.131362454, 6.162093598, 6.262266345, 6.297346183, 6.333403022, 6.368526105, 6.403610183, 6.438722311, 6.473834439, 6.508946567, 6.544058695, 6.579170823, 6.614282951, 6.649395079, 6.684507207)
B2<- c(7.070963559, 7.111540173, 7.241029073, 7.286361188, 7.332941899, 7.379255065, 7.425568231, 7.471881397, 7.518194563, 7.564507729, 7.610820895, 7.657134061, 7.703447227, 7.749760393, 7.796073559)
B3<- c(4.521314251, 4.540016492, 4.598232483, 4.619199379, 4.640333008, 4.661209109, 4.682085210, 4.702961311, 4.723837412, 4.744713513, 4.765589614, 4.786465715, 4.807341816, 4.828217917, 4.849094018)
B4<- c(3.213562132, 3.223302842, 3.254473762, 3.266064477, 3.277187008, 3.288920934, 3.300654860, 3.312388786, 3.324122712, 3.335856638, 3.347590564, 3.359324490, 3.371058416, 3.382792342, 3.394526268)
B5<- c(1.976457181, 1.980024091, 1.992376954, 1.997004598, 2.00136479, 2.006462459, 2.011290128, 2.015920227, 2.020550326, 2.025180425, 2.029810524, 2.034440623, 2.039070722, 2.043700821, 2.048330920)
B6 <- c(1.536252986, 1.53832918, 1.546124738, 1.549148836, 1.551978803, 1.555331565, 1.558684327, 1.562037089, 1.565389851, 1.568742613, 1.572095375, 1.575448137, 1.578800899, 1.582153661, 1.585506423)
B7<- c(1.048986333, 1.049560032, 1.053016618, 1.054494483, 1.055847656, 1.057718689, 1.059589722, 1.061460755, 1.063331788, 1.065202821, 1.067073854, 1.068944887, 1.070815920, 1.072686953, 1.074557986)
B8<- c(0.659435585, 0.658777307, 0.659879313, 0.660796531, 0.66153639, 0.662673154, 0.663331438, 0.663989722, 0.664648006, 0.665306290, 0.665964574, 0.666622858, 0.667281142, 0.667939426, 0.668597710)
B9<- c(0.630983686, 0.630649883, 0.630872499, 0.631969403, 0.631951738, 0.633331438, 0.633331438, 0.633331438, 0.633331438, 0.633331438, 0.633331438, 0.633331438, 0.633331438, 0.633331438, 0.633331438)
B10 <- c(0.511938593, 0.511722071, 0.512245941, 0.512856372, 0.513147483, 0.514053994, 0.514053994, 0.514053994, 0.514053994, 0.514053994, 0.514053994, 0.514053994, 0.514053994, 0.514053994, 0.514053994)

#Plot the chart

plot(d, B1, type= "o", col = "red", xlab = "Days", ylab = "YTM", main = "Yield to Maturity", ylim = c(0, 7))
lines(d, B2, type= "o", col= "blue")
lines(d, B3, type= "o", col= "green")
lines(d, B4, type= "o", col= "yellow")
lines(d, B5, type= "o", col= "orange")
lines(d, B6, type= "o", col= "black")
lines(d, B7, type= "o", col= "purple")
lines(d, B8, type= "o", col= "pink")
lines(d, B9, type= "o", col= "brown")
lines(d, B10, type= "o", col= "grey")
```

Yield to Maturity



```
YTM1av<- (sum(B1)+sum(B2)+sum(B3)+sum(B4))/60
YTM2av <- (sum(B5)+sum(B6))/30
YTM3av <- sum(B7)/15
YTM4av<- (sum(B8)+sum(B9))/30
YTM5av <- sum(B10)/15
```

```
s1<- YTM1av
YTM1c<- 1000*s1/200
YTM1v1<- YTM1c/(1+(s1/200))
YTM1i1<- sqrt((1000+YTM1c)/(1000-YTM1v1))
s2<- (YTM1i1-1)*2
```

```
YTM2c<- 1000*YTM2av/200
YTM2v1<- YTM2c/(1+(YTM2av/200))
YTM2v2<- YTM2c/((1+s2/2)^2)
YTM2k<- 1000-YTM2v1-YTM2v2
YTM2i1<- (1000+YTM2c)/(YTM2k)
s3<- (((YTM2i1)^(1/3))-1)*2
```

```
YTM3c<- 1000*YTM3av/200
YTM3v1<- YTM3c/(1+(YTM3av/200))
YTM3v2<- YTM3c/((1+s2/2)^2)
YTM3v3<- YTM3c/((1+s3/2)^3)
YTM3k<- 1000-YTM3v1-YTM3v2-YTM3v3
YTM3i1<- (1000+YTM3c)/YTM3k
s4<- (((YTM3i1)^(1/4))-1)*2
```

```

YTM4c<- 1000*YTM4av/200
YTM4v1<- YTM4c/((1+(YTM4av/200))
YTM4v2<- YTM4c/((1+s2/2)^2)
YTM4v3<- YTM4c/((1+s3/2)^3)
YTM4v4<- YTM4c/((1+s4/2)^4)
YTM4k<- 1000-YTM4v1-YTM4v2-YTM4v3-YTM4v4
YTM4i1<- (1000+YTM4c)/(YTM4k)
s5<- (((YTM4i1)^(1/5))-1)*2

```

```

f2<- ((1+s2)^2)/(1+s1)-1
f3<- ((1+s3)^3)/((1+s2)^2)-1
f4<- ((1+s4)^4)/((1+s3)^3)-1
f5<- ((1+s5)^5)/((1+s4)^4)-1

```

```

lmat<- matrix(1:5, nrow=5, ncol=1)
lmat[1,1]<-1
lmat[2,1]<- log(YTM2av/YTM1av)
lmat[3,1]<- log(YTM3av/YTM2av)
lmat[4,1]<- log(YTM4av/YTM3av)
lmat[5,1]<- log(YTM5av/YTM4av)
print(lmat)

```

```

##           [,1]
## [1,]  1.0000000
## [2,] -1.1249848
## [3,] -0.5237865
## [4,] -0.4918748
## [5,] -0.2321677

```

```

fmat<- matrix(1:25, nrow=5, ncol=5, byrow=TRUE)
print(fmat)

```

```

##           [,1] [,2] [,3] [,4] [,5]
## [1,]      1      2      3      4      5
## [2,]      6      7      8      9     10
## [3,]     11     12     13     14     15
## [4,]     16     17     18     19     20
## [5,]     21     22     23     24     25

```

```

fmat[2,1]<- ((1+s2)^2)/(1+s1)-1
fmat[3,1]<- ((1+s3)^3)/(1+s1)-1
fmat[4,1]<- ((1+s4)^4)/(1+s1)-1
fmat[5,1]<- ((1+s5)^5)/(1+s1)-1
fmat[1,2]<- 0
fmat[2,2]<- 1
fmat[3,2]<- ((1+s3)^3)/((1+s2)^2)-1
fmat[4,2]<- ((1+s4)^4)/((1+s2)^2)-1
fmat[5,2]<- ((1+s5)^5)/((1+s2)^2)-1
fmat[1,3]<- 0
fmat[2,3]<-0
fmat[3,3]<- 1
fmat[4,3]<- ((1+s4)^4)/((1+s3)^3)-1
fmat[5,3]<- ((1+s5)^5)/((1+s3)^3)-1
fmat[1,4]<- 0
fmat[2,4]<- 0

```

```
fmat[3,4]<- 0
fmat[4,4]<- 1
fmat[5,4]<- ((1+s5)^5)/((1+s4)^4)-1
fmat[,5]<- 0
fmat[5,5]<-1
print(fmat)
```

```
##           [,1]      [,2]      [,3]      [,4] [,5]
## [1,]  1.0000000  0.00000000  0.00000000  0.00000000  0
## [2,] -0.8292442  1.00000000  0.00000000  0.00000000  0
## [3,] -0.8383530 -0.05334410  1.00000000  0.00000000  0
## [4,] -0.8401188 -0.06368493 -0.01092353  1.00000000  0
## [5,] -0.8416756 -0.07280185 -0.02055420 -0.009737028  1
```