Gestion de Portefeuille

TP-5; Modèle de Black-Litterman

Patrick Hénaff

Février-Mars 2021

- Effectuer une lecture attentive de l'article de He et Litterman.
- A partir de la note de cours, reproduire les autres exemples de l'article, comparer les résultats avec ceux obtenus avec le package BLCOP.
- Comparer avec une allocation MV classique.

Market data from He & Litterman paper

```
 data =
'1,0.4880,0.4780,0.5150,0.4390,0.5120,0.4910
 0.4880,1,0.6640,0.6550,0.3100,0.6080,0.7790
 0.4780,0.6640,1,0.8610,0.3550,0.7830,0.6680
 0.5150,0.6550,0.8610,1,0.3540,0.7770,0.6530
 0.4390,0.3100,0.3550,0.3540,1,0.4050,0.3060
 0.5120,0.6080,0.7830,0.7770,0.4050,1,0.6520
 0.4910,0.7790,0.6680,0.6530,0.3060,0.6520,1'

  Corrmat = matrix( as.double(spl( gsub('\n', ',', data), ',')),
                    nrow = length(spl(data, '\n')), byrow=TRUE)

  stdevs = c(16.0, 20.3, 24.8, 27.1, 21.0,  20.0, 18.7)/100
  w.eq = c(1.6, 2.2, 5.2, 5.5, 11.6, 12.4, 61.5)/100
  # Prior covariance of returns
  Sigma = Corrmat * (stdevs %*% t(stdevs))
```

Equilibrium risk premium

```
# risk aversion parameter
delta = 2.5
Pi = delta * Sigma %*% w.eq
```

Summary market data

Assets	Std Dev	Weq	PI
Australia	16	1.6	3.9
Canada	20.3	2.2	6.9
France	24.8	5.2	8.4
Germany	27.1	5.5	9
Japan	21	11.6	4.3
UK	20	12.4	6.8
USA	18.7	61.5	7.6

Exemple 1

r_u2=r_f2+(r_u-r_f) r_g2=((w_f*r_f2)+(w_u*r_u2))/(w_f+w_u)+0.05 w_f*r_f+w_u*r_u+w_g*r_g=w_f*r_f2+w_u*r_u

Après identification, on arrive à l'équation suivante:

```
## [1] 11.49351
```

Nous pouvons calculer maintenant r_u2 et r_f2

```
## [1] 7.6
```

```
## [1] 6
```

```
##      Australia      Canada     France  Germany     Japan         UK       USA
## [1,] 0.1143978 0.008153653 -0.3958454 0.579924 0.1806869 -0.1045678 0.6172508
```