



**INSTITUTO DE CIENCIAS ECONÓMICO ADMINISTRATIVAS**  
**DOCTORADO EN CIENCIAS ECONÓMICO ADMINISTRATIVAS**

**LABORATORIO Rstudio**  
**BONUS\_LABS**

**GRADO: 3ER. SEMESTRE**



**MATERIA:**

**COMPLEJIDAD  
ECONÓMICA**

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LABORATORIO PLOT HOOVER CURVE #####

INSTALAR PREVIAMENTE `install.packages("devtools")` `install.packages("devtools", type = "win.binary")`

```
library(devtools)

## Loading required package: usethis

library(EconGeo)

##
## Please cite EconGeo in publications as:

## Balland, P.A. (2017) Economic Geography in R: Introduction to the EconGeo Package, Papers in Evolutionary Economic Geography, 17 (09): 1-75
```

generate vectors industrial

```
ind <- c(0, 10, 10, 30, 50)
pop <- c(10, 15, 20, 25, 30)
```

CHECK VECTOR

```
ind

## [1] 0 10 10 30 50
```

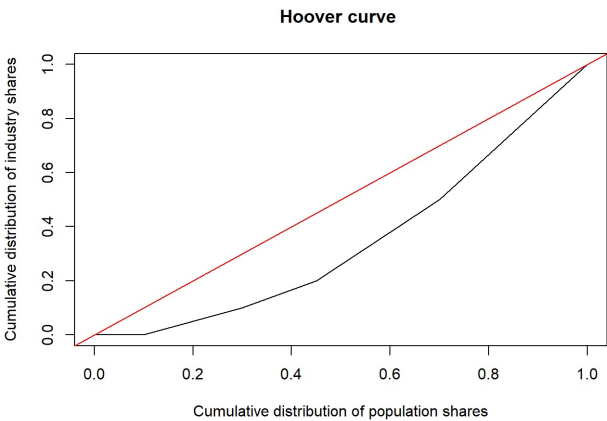
CHECK VECTOR POP

```
pop

## [1] 10 15 20 25 30
```

RUN THE FUNTION (30% de la poblacion produce 50% de los resultados industriales)

```
Hoover.curve (ind, pop)
```



COMPUTE HOOVER GINI

```
Hoover.Gini (ind, pop)

## [1] 0.31
```

##### LABORTARIO GINI #####

##### LABORATORIO HOOVER GINI #####

USAGE Hoover.Gini(MAT,POP)

GENERATE VECTORS OF INDUSTRIAL COUNT

```
r ind <- c(0, 10, 10, 30, 50) pop <- c(10, 15, 20, 25, 30)
```

RUN THE FUNCTION

```
r Hoover.Gini (ind,pop)

## [1] 0.31
```

GENERATE A REGION-INDUSTRY MATRIX

```
r mat = matrix ( c (0, 10, 0, 0, 0, 15, 0, 0, 0, 20, 0, 0, 0, 25, 0, 1, 0, 30, 1, 1), ncol = 4, byrow = T) rownames(mat) <- c ("R1", "R2", "R3", "R4", "R5") colnames(mat) <- c ("I1", "I2", "I3", "I4")
```

RUN THE FUNCTION

```
r Hoover.Gini (mat,pop)

## Industry Hoover.Gini ## 1 I1 NaN ## 2 I2 0.000 ## 3 I3 0.700 ## 4 I4 0.475
```

RUN THE FUNCTION BY AGGREGATING ALL INDUSTRIES

```
r Hoover.Gini (rowSums(mat),pop)

## [1] 0.015
```

RUN THE FUNCTION #1 ONLY

```
r Hoover.Gini (mat[,1],pop)

## [1] NaN
```

RUN THE FUNCTION #2 ONLY (perfectamente proporcional)

```
r Hoover.Gini (mat[,2],pop)

## [1] 0
```

RUN THE FUNCTION #3 ONLY (30% produce el 100% de la producción)

```
r Hoover.Gini (mat[,3], pop)
```

## [1] 0.7

RUN THE FUNCTION #4 ONLY (55% produce el 100% de la producción)

r Hoover.Gini (mat[,4], pop)

## [1] 0.475

LABORATORIO LOCATIONAL GINI #####

GENERATE REGION- INDUSTRI MATRIX

```
mat = matrix (
  c (100, 0, 0, 0, 0, 0,
    0, 15, 5, 70, 10,
    0, 20, 10, 20, 50,
    0, 25, 30, 5, 40,
    0, 40, 55, 5, 0), ncol = 5, byrow = T)
rownames(mat) <- c ("R1", "R2", "R3", "R4", "R5")
colnames(mat) <- c ("I1", "I2", "I3", "I4", "I5")
```

RUN THE FUNCTION

locational.Gini (mat)

```
## Industry Loc.Gini
## 1      I1      0.40
## 2      I2      0.18
## 3      I3      0.27
## 4      I4      0.31
## 5      I5      0.28
```

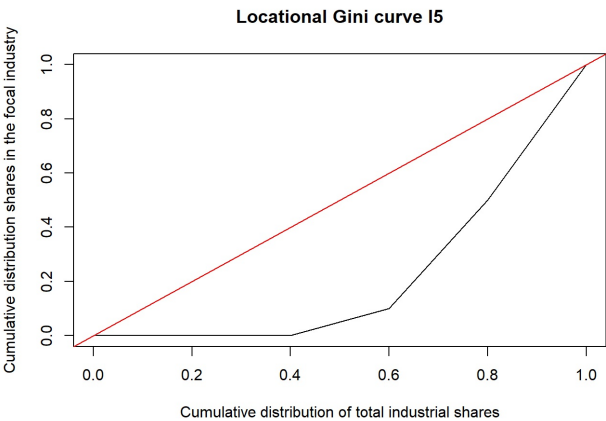
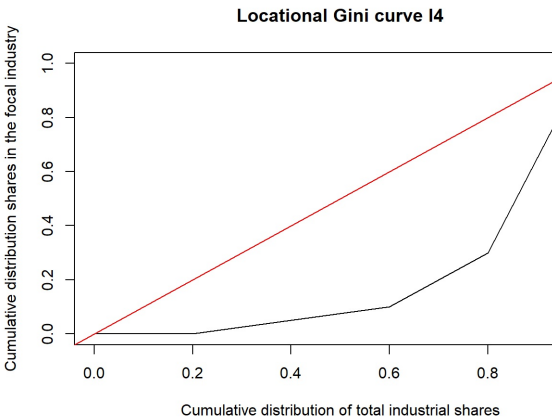
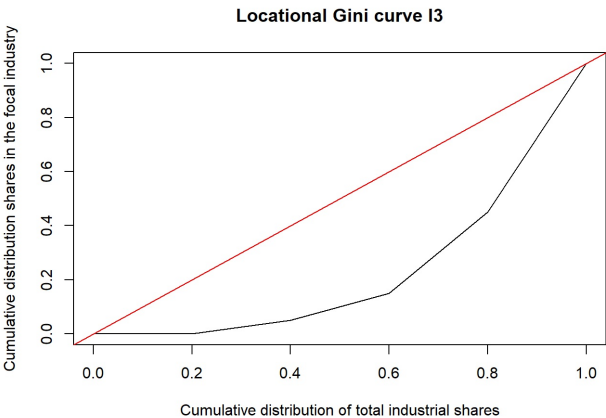
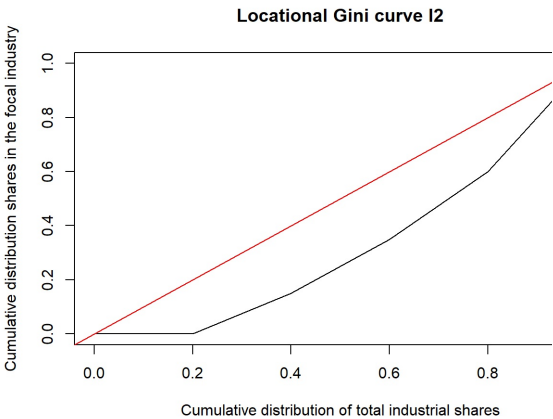
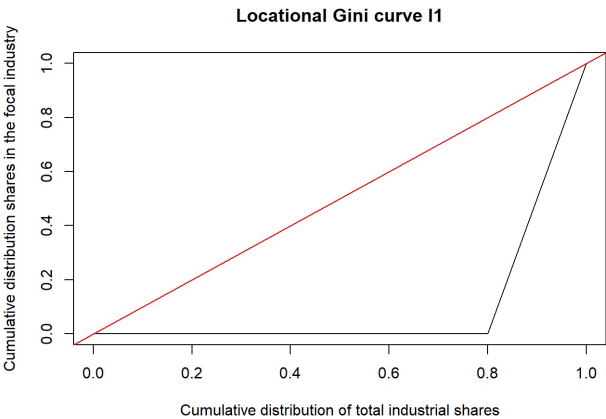
##### LOCATIONAL.GINI\_CURVE #####

GENERATE A RECION-INDUSTRI MATRIX

r mat = matrix ( c (100, 0, 0, 0, 0, 0, 15, 5, 70, 10, 0, 20, 10, 20, 50, 0, 25, 30, 5, 40, 0, 40, 55, 5, 0), ncol = 5, byrow = T) rownames(mat) <- c ("R1", "R2", "R3", "R4", "R5") colnames(mat) <- c ("I1", "I2", "I3", "I4", "I5")

RUN THE FUNCTION (SHOWS INDUSTRY #5)

r locational.Gini.curve (mat)



r locational.Gini.curve (mat, pdf = TRUE)

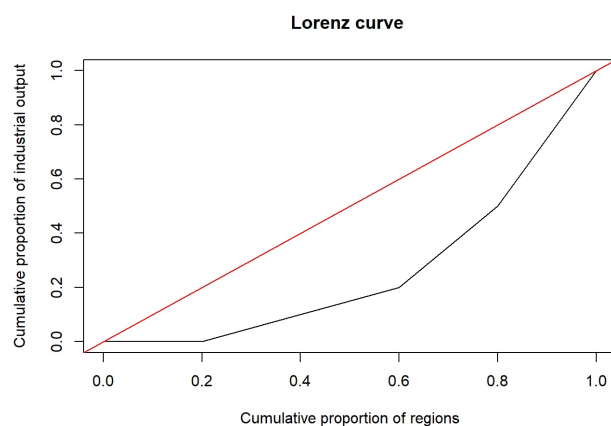
## [1] "locational.Gini.curve.pdf has been saved to your current working directory"

GENERATE VECTORS OF INDUSTRIAL COUNT

```
ind <- c(0, 10, 10, 30, 50)
```

RUN THE FUNCTION

```
Lorenz.curve (ind)
```



```
Lorenz.curve (ind, pdf = TRUE)
```

```
## [1] "Lorenz.curve.pdf has been saved to your current working directory"
```

```
Lorenz.curve (ind, plot = FALSE)
```

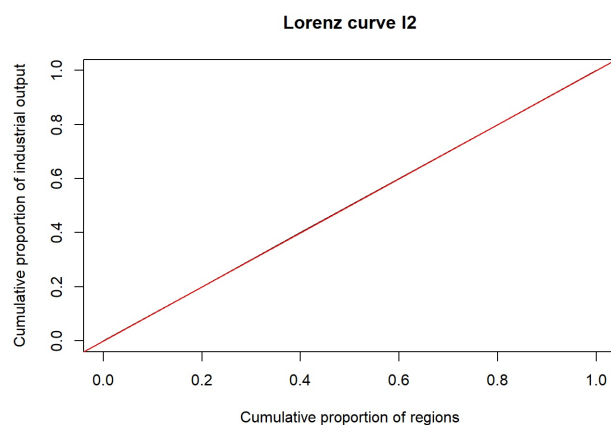
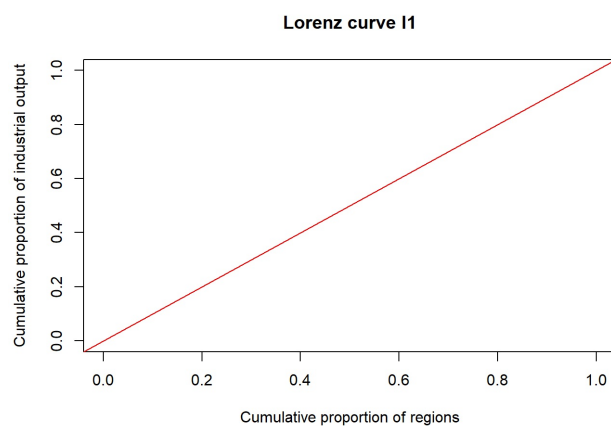
```
## $cum.reg  
## [1] 0.0 0.2 0.4 0.6 0.8 1.0  
##  
## $cum.out  
## [1] 0.0 0.0 0.1 0.2 0.5 1.0
```

GENERATE A REGION- INDUSTRY MATRIX

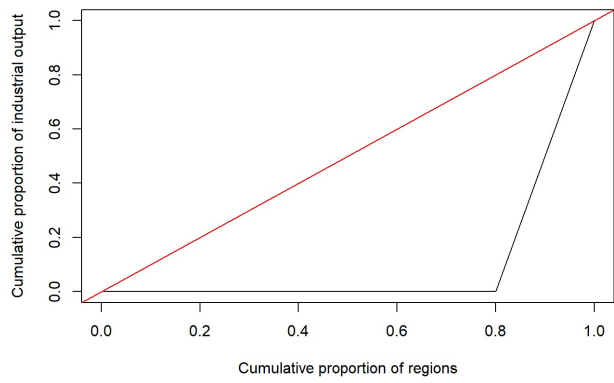
```
mat= matrix (  
  c (0, 1, 0, 0,  
    0, 1, 0, 0,  
    0, 1, 0, 0,  
    0, 1, 0, 1,  
    0, 1, 1, 1), ncol = 4, byrow = T)  
rownames(mat) <- c ("R1", "R2", "R3", "R4", "R5")  
colnames(mat) <- c ("I1", "I2", "I3", "I4")
```

RUN THE FUNCTION

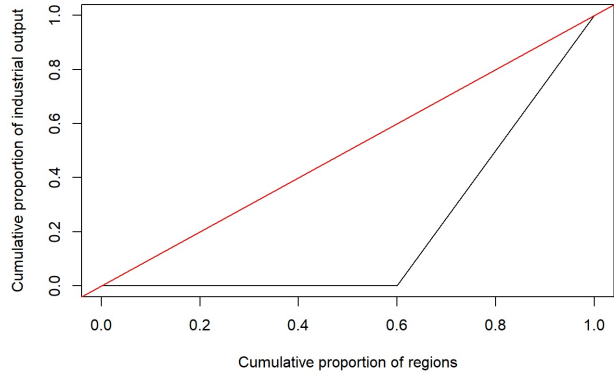
```
Lorenz.curve (mat)
```



**Lorenz curve I3**



**Lorenz curve l4**



```
Lorenz.curve (mat, pdf = TRUE)
```

```
## [1] "Lorenz.curve.pdf has been saved to your current working directory"
```

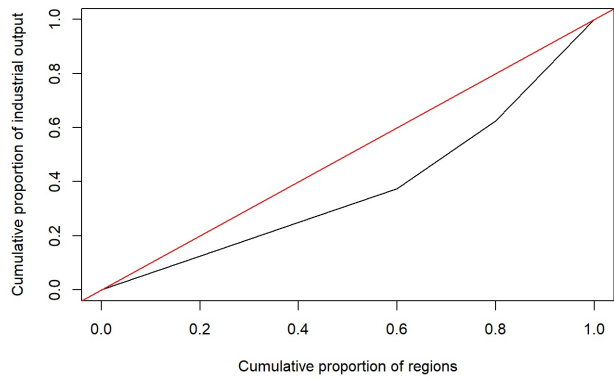
```
Lorenz.curve (mat, plot = FALSE)
```

```
## $cum.reg
## [1] 0.0 0.2 0.4 0.6 0.8 1.0
##
## $cum.out
##      R1  R2  R3  R4  R5
##  0 NaN NaN NaN NaN NaN
```

RUN THE FUNCTION BY AGGREGATION ALL INDUSTRIES

```
Lorenz.curve (rowSums(mat))
```

**Lorenz curve**



```
Lorenz.curve (rowSums(mat), pdf = TRUE)
```

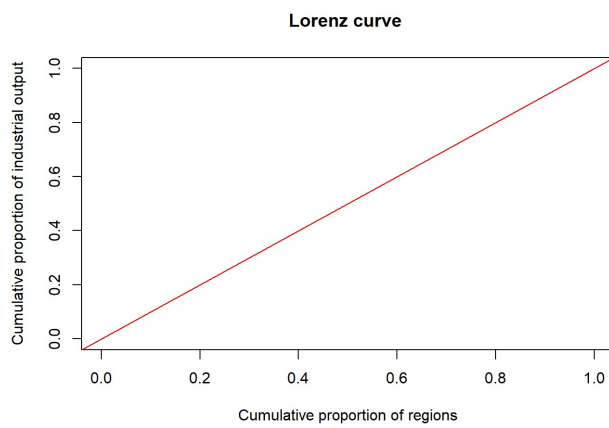
```
## [1] "Lorenz.curve.pdf has been saved to your current working directory"
```

```
Lorenz.curve (rowSums(mat), plot = FALSE)
```

```
## $cum.reg
## [1] 0.0 0.2 0.4 0.6 0.8 1.0
##
## $cum.out
##      R1  R2  R3  R4  R5
## 0.000 0.125 0.250 0.375 0.625 1.000
```

RUN THE FUNCTION FOR INDUSTRIY #1 ONLY (PERFECT EQUALITY)

```
Lorenz.curve (mat[,1])
```



```
Lorenz.curve (mat[,1], pdf = TRUE)
```

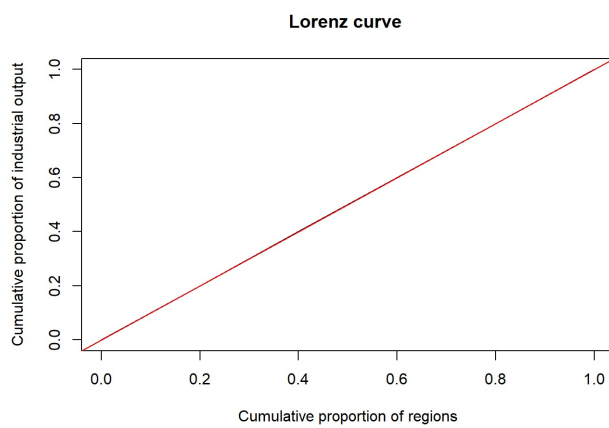
```
## [1] "Lorenz.curve.pdf has been saved to your current working directory"
```

```
Lorenz.curve (mat[,1], plot = FALSE)
```

```
## $cum.reg
## [1] 0.0 0.2 0.4 0.6 0.8 1.0
##
## $cum.out
##      R1 R2 R3 R4 R5
## 0 NaN NaN NaN NaN NaN
```

RUN THE FUNCTION FOR INDUSTRIY #2 ONLY (PERFECT EQUALITY)

```
Lorenz.curve (mat[,2])
```



```
Lorenz.curve (mat[,2], pdf = TRUE)
```

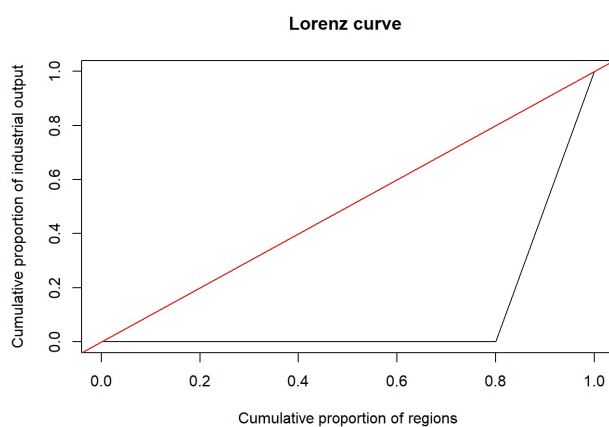
```
## [1] "Lorenz.curve.pdf has been saved to your current working directory"
```

```
Lorenz.curve (mat[,2], plot = FALSE)
```

```
## $cum.reg
## [1] 0.0 0.2 0.4 0.6 0.8 1.0
##
## $cum.out
##      R1 R2 R3 R4 R5
## 0.0 0.2 0.4 0.6 0.8 1.0
```

RUN THE FUNCTION FOR INDUSTRIY #3 ONLY (PERFECT UNEQUALITY)

```
Lorenz.curve (mat[,3])
```



```
Lorenz.curve (mat[,3], pdf = TRUE)
```

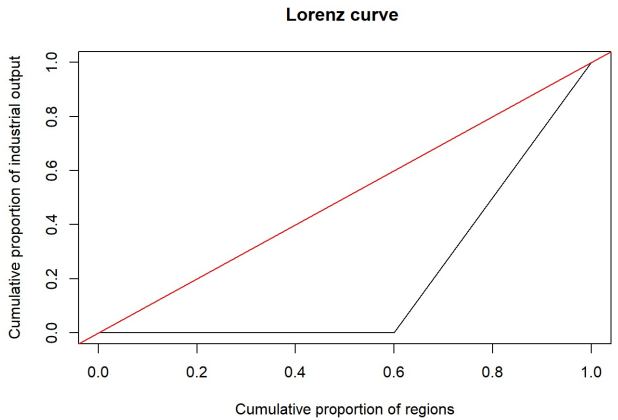
```
## [1] "Lorenz.curve.pdf has been saved to your current working directory"
```

```
Lorenz.curve (mat[,3], plot = FALSE)
```

```
## $cum.reg
## [1] 0.0 0.2 0.4 0.6 0.8 1.0
##
## $cum.out
##      R1 R2 R3 R4 R5
##      0 0 0 0 0 1
```

RUN THE FUNCTION FOR INDUSTRIY #4 ONLY (PERFECT UNEQUALITY)

```
Lorenz.curve (mat[,4])
```



```
Lorenz.curve (mat[,4], pdf = TRUE)
```

```
## [1] "Lorenz.curve.pdf has been saved to your current working directory"
```

```
Lorenz.curve (mat[,4], plot = FALSE)
```

```
## $cum.reg
## [1] 0.0 0.2 0.4 0.6 0.8 1.0
##
## $cum.out
##      R1 R2 R3 R4 R5
##      0.0 0.0 0.0 0.0 0.5 1.0
```

COMPARE THE DISTRIBUTION OF THE INDUSTRIES

```
par(mfrow=c(2,2))
Lorenz.curve (mat[,1])
Lorenz.curve (mat[,2])
Lorenz.curve (mat[,3])
Lorenz.curve (mat[,4])
```

