

# Is the World Bank Financing Bad Governance in Developing Countries?

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*4 octobre 2019*

In developing countries with high level of corruption, governance become worst when they receive grants from the World Bank.

```
# The data are imported bellow. The first one have data about grants fom the World. The second have the
grants<-read.csv("https://finances.worldbank.org/api/views/34vv-5t6y/rows.csv?accessType=DOWNLOAD&bom=t.

sheetName="GovernmentEffectiveness"
corrup<-read.xlsx("wgidataset.xlsx",sheetName ="GovernmentEffectiveness" ) #"ControlofCorruption" Source

grant<-data.frame(grants$Country,grants$Region,grants$Original.Principal.Amount,grants$Agreement.Signing,
colnames(grant)<-c("Country", "Region", "Amount", "SignedDate")

# Function to convert date to Year only
dateY<-function(x,formatDate){
  d=as.Date(x,format = formatDate)
  new_d=as.numeric(format(d,"%Y"))
  return(new_d)
}

# Creating a column for the year of signed agreements between the World Bank and the beneficiaries of g
grant['Year']=dateY(grant$SignedDate,format="%m/%d/%Y")

str(grant)           # shows that the variable Amount is a factor. It should be numeric.

## 'data.frame':    957 obs. of  5 variables:
## $ Country      : Factor w/ 76 levels "Afghanistan",...: 71 49 31 10 18 1 1 1 1 18 ...
## $ Region       : Factor w/ 6 levels "AFRICA","EAST ASIA AND PACIFIC",...: 1 1 4 1 1 6 6 6 6 1 ...
## $ Amount       : Factor w/ 291 levels "1,000,000.00",...: 264 62 173 241 209 10 163 53 186 190 ...
## $ SignedDate   : Factor w/ 679 levels "", "01/04/2011",...: 157 669 640 672 448 137 260 260 260 453 ...
## $ Year         : num  1998 1998 2000 2000 2001 ...

grant$Amount=as.numeric(grant$Amount) # converting the variable "Amount" as numeric

# Calculate total of grant, by country, by year
grant2<-grant%>%
  group_by(Country,Region,Year)%>%
  summarize(Total=sum(Amount))

head(grant2,4)           # Viewing the first four rows of the data frame 'grant2'

## # A tibble: 4 x 4
## # Groups:   Country, Region [1]
##   Country      Region      Year Total
##   <fct>         <fct>    <dbl> <dbl>
## 1 Afghanistan SOUTH ASIA  2002   412
## 2 Afghanistan SOUTH ASIA  2003   574
## 3 Afghanistan SOUTH ASIA  2004   457
```

```

## 4 Afghanistan SOUTH ASIA 2005 915
# The variable is control of corruption. Then high value is better
colnames(corrup)<-t(corrup[12,]) # Add names of columns, available in line 12.
corrup2<-corrup[13:226,] # Selecting data starting on row 12. The rows above 12 do not contain

# Selecting only the estimate's columns and the country name column. They provide the index data. The o
corrup3=data.frame(corrup2$`Country/Territory`)
for(i in 1:dim(corrup2)[2]){
  if(colnames(corrup2[i])==`Estimate`){
    corrup3[as.character(i)]=corrup2[,i]
  }
}

# Names the columns of the new data frame with the years
Year<-unique(c(t(corrup[11,])))[-1]
Year

## [1] "1996" "1998" "2000" "2002" "2003" "2004" "2005" "2006" "2007" "2008"
## [11] "2009" "2010" "2011" "2012" "2013" "2014" "2015" "2016" "2017" "2018"

colnames(corrup3)<-c("Country",Year)

# Selecting data from year 2002
year<-seq(2002,2015,1)
corrup3<-corrup3[,c("Country",year)]

##### Select in corrup only countries that receive grants #####
corrupT<-t(corrup3) # Transpose the dataframe to have the countries name in columns
colnames(corrupT)<-t(corrupT[1,]) # Change default name to countries name which are in row 1.
corrupT<-corrupT[-1,] # Remove the first row that contains the countries names

unq<-function(x){ # Function that returning a vector of unique values separated by co
  y=NULL
  for(i in 1:length(x)){
    if(!x[i] %in% y){
      y=c(y,x[i])
    }
  }
  return(y)
}

grant_countries<-unique(as.character(grant2$Country)) # Names of countries that receive grants from 200

#####
##### Correct difference in countries names spelling, between the dataframe #####
cog=NULL
for(i in 1:length(grant_countries)){ # Identify difference in countries names in the two data frame
  if(!grant_countries[i] %in% colnames(corrupT)){
    cog=c(cog,grant_countries[i])
  }
}
}

```

```

# Data frame that contains names spelling that are different
CoSpell<-data.frame(corName=c("Central African Republic", "Congo, Dem. Rep.", "Congo, Rep.", "Lao PDR", "M
grantName=c("Central Africa", "Congo, Democratic Republic of", "Congo, Republic of", "Lao People's

for(i in 1:dim(CoSpell)[1]){ # Correct the names in the data frame of control for corruption
  cf=gsub(CoSpell$corName[i], CoSpell$grantName[i], colnames(corrupT))
}

colnames(corrupT)<-cf          # add corrected names as column names of the data frame of control for corrup

#####
# Identify countries names that appear in both data frame
co=NULL
for(i in 1:length(grant_countries)){
  if(grant_countries[i] %in% colnames(corrupT)){
    co=c(co, grant_countries[i])
  }
}

corrupFi<-corrupT[,co];dim(corrupFi)      # This data frame (corrupFi) has 62 countries found in grant2

## [1] 14 62

corrupFinal<-data.frame(newcol = c(t(corrupFi)), stringsAsFactors=FALSE) # Create a data frame of one c

##### continue below

corrupFinal["Year"]<-rep(year,dim(corrupFinal)[2])    # Adding the column of the year to the new data fr

rep2<-function(x,n){  # This function should repeat each element of a vector n times
  y=NULL
  for(i in 1:length(x)){
    y=c(y,rep(x[i],n))
  }
  return(y)
}

corrupFinal["Country"]<-rep2(co,length(year));dim(corrupFinal) # Data frame with index of control for c

## [1] 868 3

# Data frame of grants with only country found in the data frame 'corrupFinal'. However, data are not a
Grant<-grant2 %>%
  filter(Country %in% co)
dim(Grant)

```

```
## [1] 352 4

# Merging data frame 'Grant' and 'corrupFinal' where country name and year are the same
DatFinal<-inner_join(Grant, corrupFinal, by = NULL, copy = FALSE, suffix = c(".grant", ".corrup") )

## Joining, by = c("Country", "Year")

## Warning: Column `Country` joining factor and character vector, coercing
## into character vector

colnames(DatFinal)<-c(colnames(DatFinal)[1:3],"Grant","Control")

str(DatFinal)

## Classes 'grouped_df', 'tbl_df', 'tbl' and 'data.frame': 347 obs. of 5 variables:
## $ Country: chr "Afghanistan" "Afghanistan" "Afghanistan" "Afghanistan" ...
## $ Region : Factor w/ 6 levels "AFRICA","EAST ASIA AND PACIFIC",...: 6 6 6 6 6 6 6 6 6 6 ...
## $ Year : num 2002 2003 2004 2005 2006 ...
## $ Grant : num 412 574 457 915 760 ...
## $ Control: chr "-1.56797313690186" "-1.23885667324066" "-0.688740909099579" "-0.367727726697922" .
## - attr(*, "groups")=Classes 'tbl_df', 'tbl' and 'data.frame': 61 obs. of 3 variables:
## ..$ Country: chr "Afghanistan" "Angola" "Bangladesh" "Benin" ...
## ..$ Region : Factor w/ 6 levels "AFRICA","EAST ASIA AND PACIFIC",...: 6 1 6 1 6 1 1 2 1 1 ...
## ..$ .rows :List of 61
## .. ..$ : int 1 2 3 4 5 6 7 8 9 10 ...
## .. ..$ : int 15 16
## .. ..$ : int 17 18
## .. ..$ : int 19 20 21 22 23 24
## .. ..$ : int 25 26 27 28 29
## .. ..$ : int 30 31 32 33 34 35 36 37 38 39 ...
## .. ..$ : int 42 43 44 45 46 47 48 49 50 51 ...
## .. ..$ : int 53 54 55 56 57 58 59
## .. ..$ : int 60
## .. ..$ : int 61 62 63 64 65 66 67 68
## .. ..$ : int 69 70 71 72 73 74 75 76
## .. ..$ : int 77 78 79 80 81 82
## .. ..$ : int 83 84 85 86 87 88 89
## .. ..$ : int 90 91 92 93 94 95 96 97
## .. ..$ : int 98 99 100
## .. ..$ : int 101 102 103 104 105 106 107 108 109
## .. ..$ : int 110 111 112 113 114 115 116 117
## .. ..$ : int 118 119
## .. ..$ : int 120 121 122 123 124
## .. ..$ : int 125 126 127 128 129 130 131 132
## .. ..$ : int 133 134 135 136 137 138 139
## .. ..$ : int 140 141 142
## .. ..$ : int 143 144 145 146 147 148 149 150 151 152
## .. ..$ : int 153 154
## .. ..$ : int 155 156 157
## .. ..$ : int 158 159 160 161 162
## .. ..$ : int 163 164 165 166 167 168 169 170 171 172 ...
## .. ..$ : int 176 177 178 179 180 181 182 183 184
## .. ..$ : int 185 186 187 188 189 190
## .. ..$ : int 191
## .. ..$ : int 192 193 194 195 196 197 198 199 200 201 ...
## .. ..$ : int 204 205 206 207
```

```
## ..$ : int 208 209 210 211 212 213
## ..$ : int 214
## ..$ : int 215 216 217 218
## ..$ : int 219 220 221
## ..$ : int 222 223 224
## ..$ : int 225 226 227 228
## ..$ : int 229
## ..$ : int 230 231 232 233 234 235 236 237 238 239 ...
## ..$ : int 241 242 243 244 245 246 247
## ..$ : int 248 249 250 251 252 253 254 255
## ..$ : int 256
## ..$ : int 257 258 259 260 261 262 263 264 265 266 ...
## ..$ : int 269 270 271 272
## ..$ : int 273 274 275 276 277 278 279 280 281 282 ...
## ..$ : int 285 286 287 288 289 290 291
## ..$ : int 292
## ..$ : int 293 294 295 296
## ..$ : int 297
## ..$ : int 298
## ..$ : int 299 300 301 302 303 304 305 306 307 308 ...
## ..$ : int 312 313 314
## ..$ : int 315 316 317 318 319 320 321 322
## ..$ : int 323 324 325 326 327 328 329
## ..$ : int 330 331 332 333 334 335
## ..$ : int 336 337 338
## ..$ : int 339 340 341 342
## ..$ : int 343
## ..$ : int 344
## ..$ : int 345 346 347
## ..- attr(*, ".drop")= logi TRUE

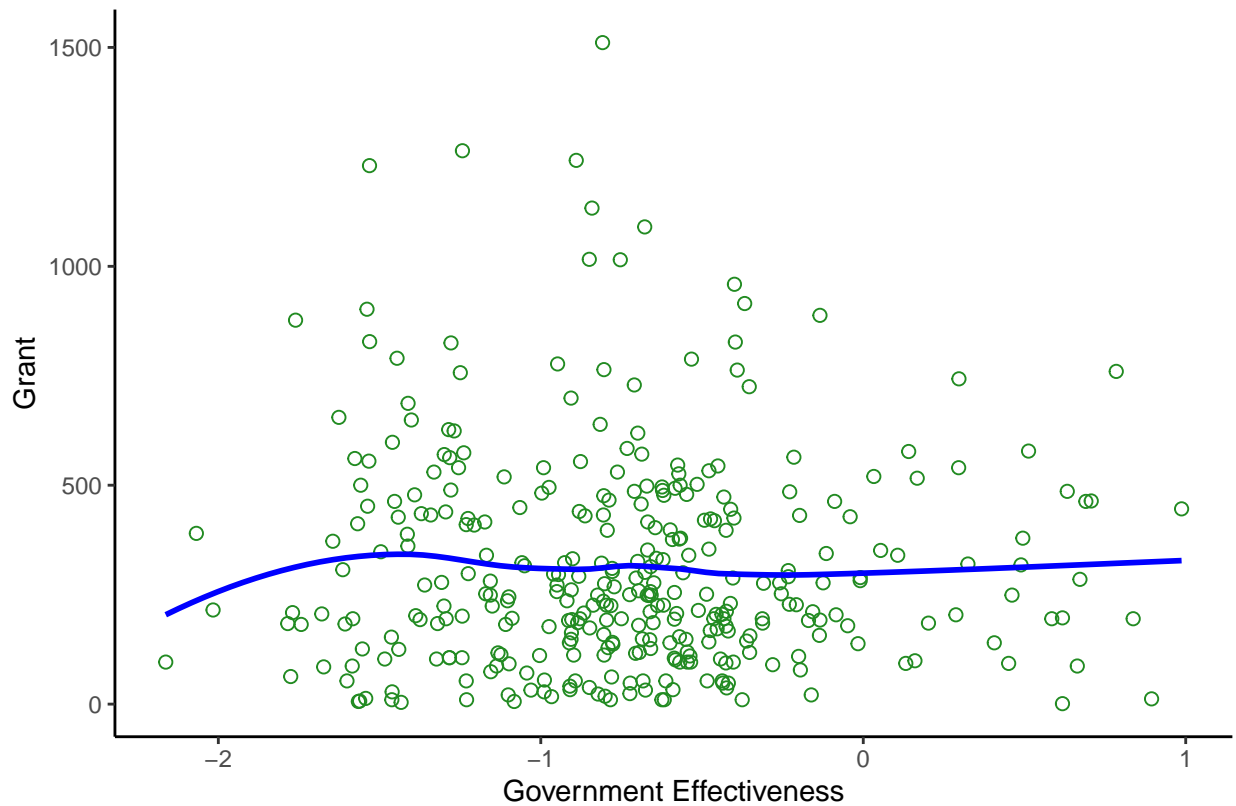
DatFinal <- within(DatFinal, {
  Country <- factor(Country)
  Control<-as.numeric(Control)
})
```

```
## Warning in eval(substitute(expr), e): NAs introduits lors de la conversion
## automatique
```

A scatter plot of the linkage between grants and government effectiveness is presented below. It shows that the World Bank tends not to account for how the population perceive their governments effectiveness to grant funds to their countries.

```
#cor(DatFinal$Grant,DatFinal$Control)
gg1 <- ggplot(DatFinal, aes(x=Control, y=Grant)) +
  geom_point(col='forestgreen',size=2,shape=1) +
  geom_smooth( se=F,col='blue') +
  #facet_wrap(~Region) +
  #xlim(c(0, 0.1)) +
  #ylim(c(0, 500000)) +
  labs(#subtitle="Area Vs Population",
    y="Grant",
    x="Government Effectiveness",
    # title="Linkage between Grant from the World Bank and Governement Effectiveness",
    caption = "Source: Graphic by Raulin L. Cadet, with data from the World Bank")+
  theme_classic()
```

```
plot(gg1)
```



Source: Graphic by Raulin L. Cadet, with data from the World Bank

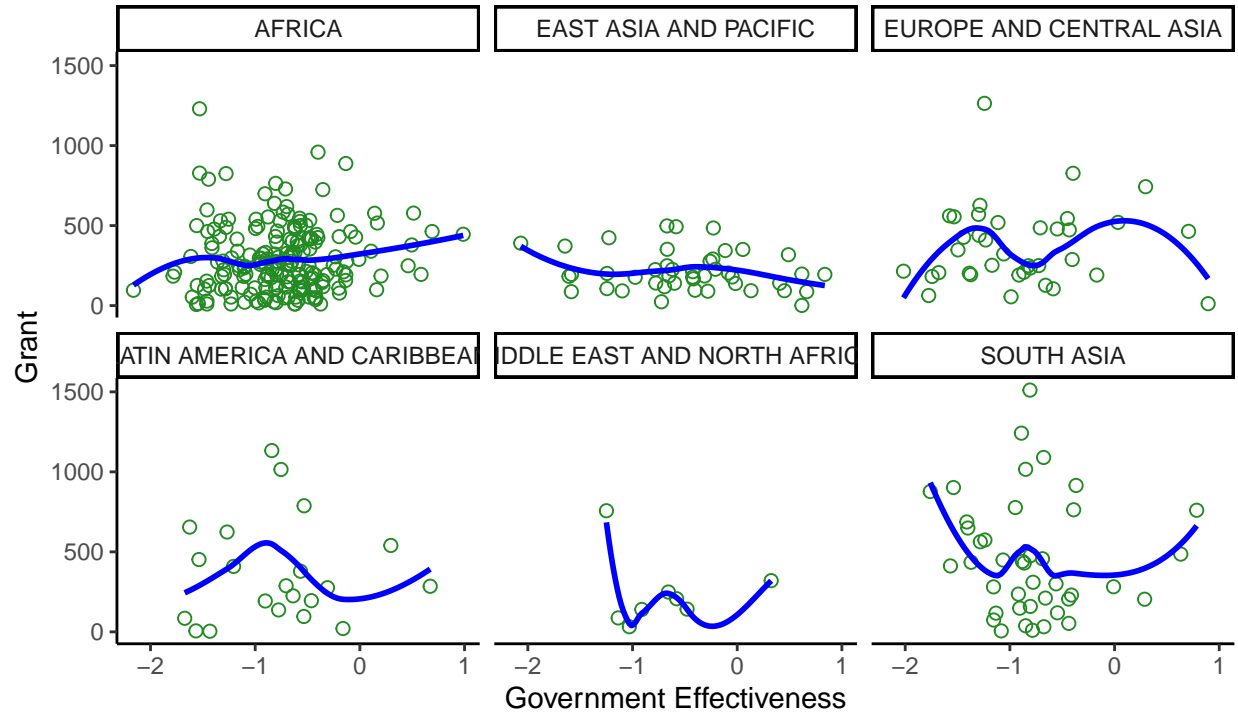
Considering a scatter plot, for the same variables, but by region, only the graphic related to Africa reveals that grants tend to increase with high perception of government effectiveness. However, this relation seems to be weak. Considering East Asia and Pacific, the curve estimating the relation between grants and government effectiveness is almost flat, showing no relation between them. For the other regions, the relation is not consistent, suggesting that the World Bank is not following a rule related to government effectiveness to grant fund.

The absence of such a rule should not encourage government of developing countries to improve the effectiveness of public policy.

```
gg2 <- ggplot(DatFinal, aes(x=Control, y=Grant)) +
  geom_point(col='forestgreen',size=2,shape=1) +
  geom_smooth( se=F,col='blue') +
  facet_wrap(~Region) +
  #xlim(c(0, 0.1)) +
  #ylim(c(0, 500000)) +
  labs(subtitle="By Region (2002-2015)",
       y="Grant",
       x="Government Effectiveness",
       title="Linkage between Grant from the World Bank and Government Effectiveness",
       caption = "Source: Graphic by Raulin L. Cadet, with data from the World Bank")+
  theme_classic()
```

```
plot(gg2)
```

Linkage between Grant from the World Bank and Government Effectiveness  
By Region (2002–2015)



Source: Graphic by Raulin L. Cadet, with data from the World Bank