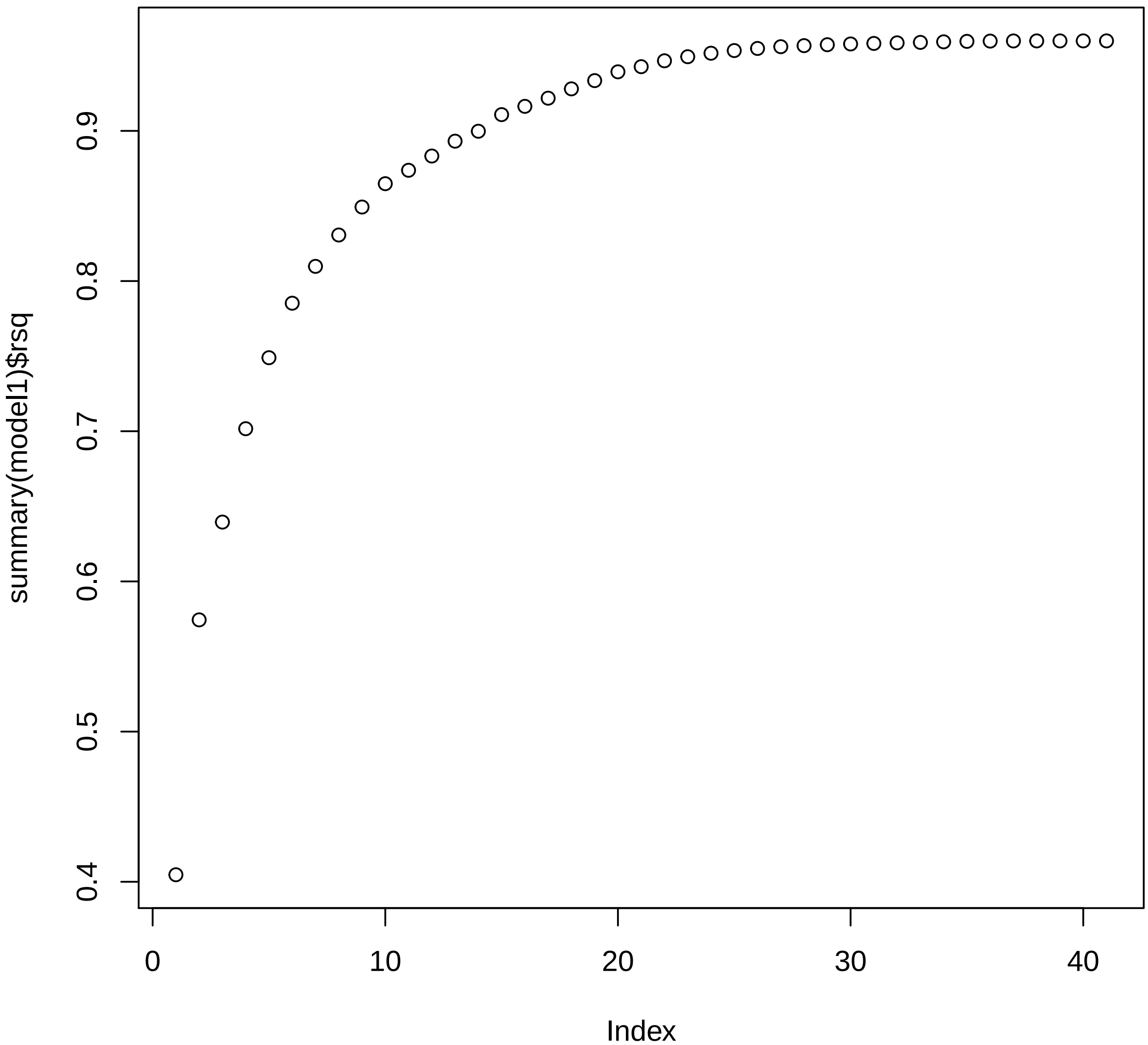
Economic growth Notebook

We will use a dataset that was used in the paper: I just ran two million regressions by Sala-I-Martin and Model uncertainty in cross country growth regression by Fernandez et. al. The dataset has 41 possible explanatory variables with 72 countries. The data consists of 43 columns with the Country, y (economic growth in per capita GDP) and 41 possible predictor variables.

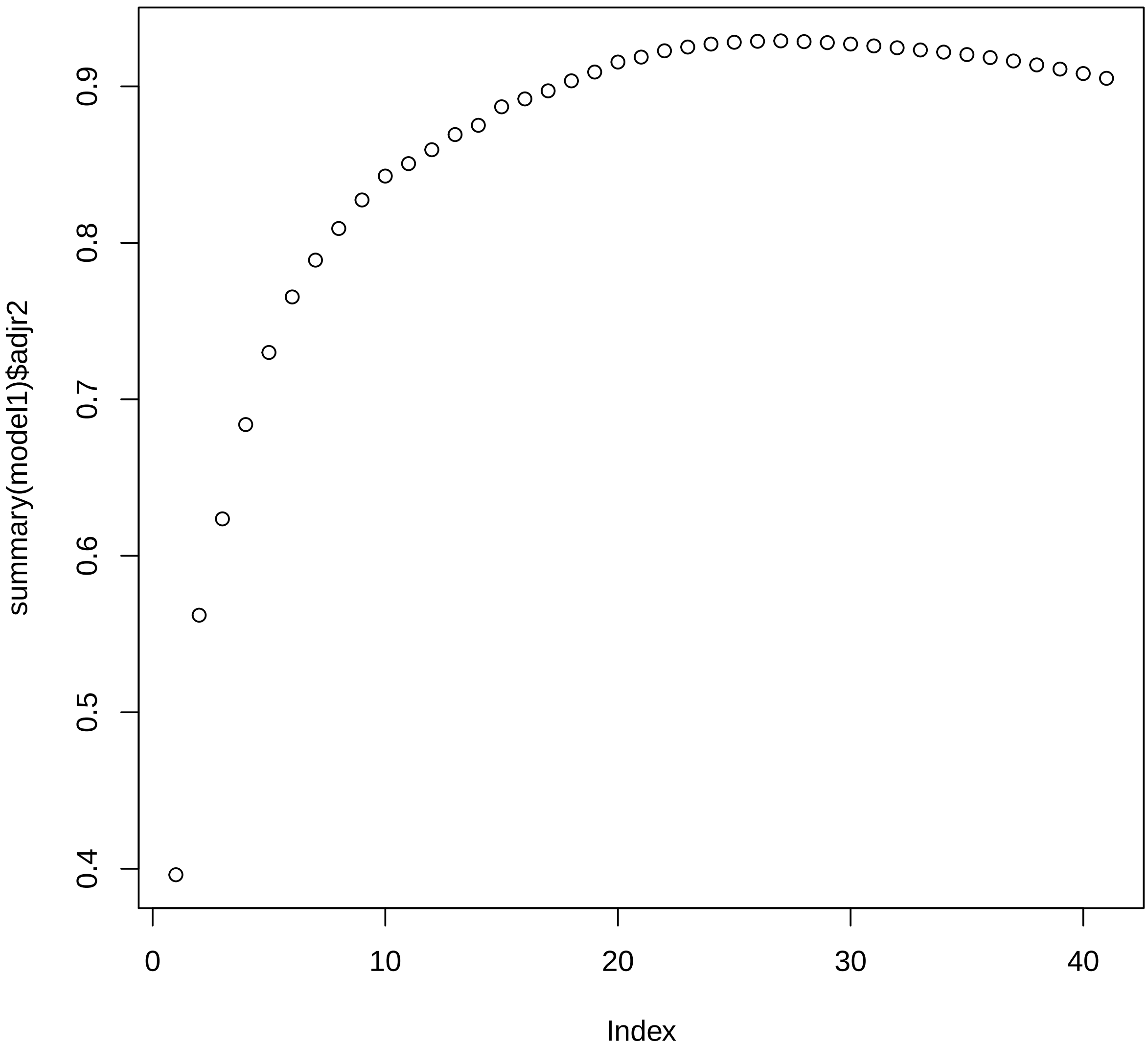
```
rm(list=ls()) # remove all objects

eg <- read.csv("economicgrowth.csv")
# str(eg)
eg1 <- subset(eg, select = -c(Country))
str(eg1)
```

We now conduct model selection by exhaustive search. Note that we have 2^41 which is approximately 2 trillion possible regressions to run. The leaps package has some smart ways to search over this space by avoiding visiting parts of the space where the optimum cannot exist. It employs a branch and bound algorithm to search more efficiently. This would take a few minutes to run on a laptop. The model shows the bias-variance trade-off. We can also plot the variables identified using the plot command.

```
library(leaps)
model1 <- regsubsets(y ~ .,data = eg1, nvmax = 41)

plot(summary(model1)$rsq)
```



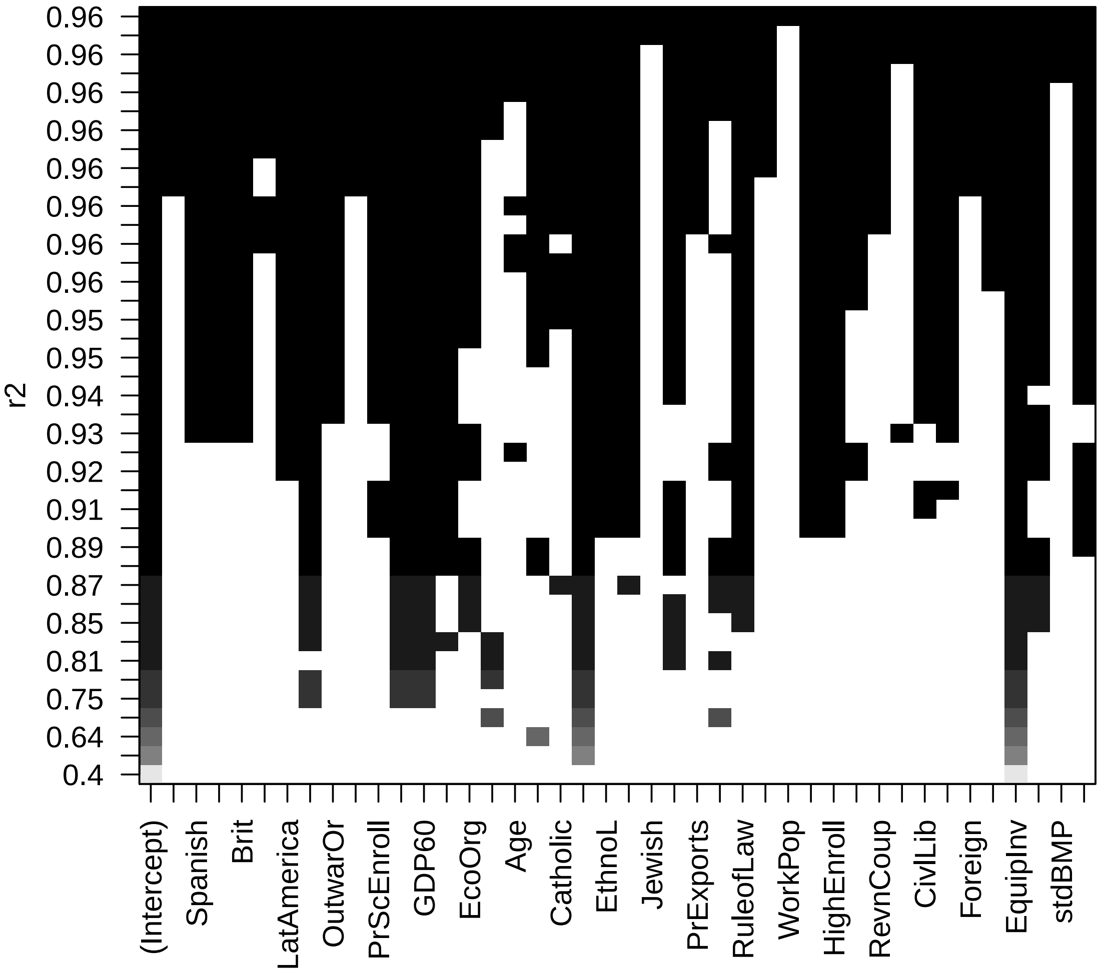

```
plot(summary(model1)$adjr2)
```



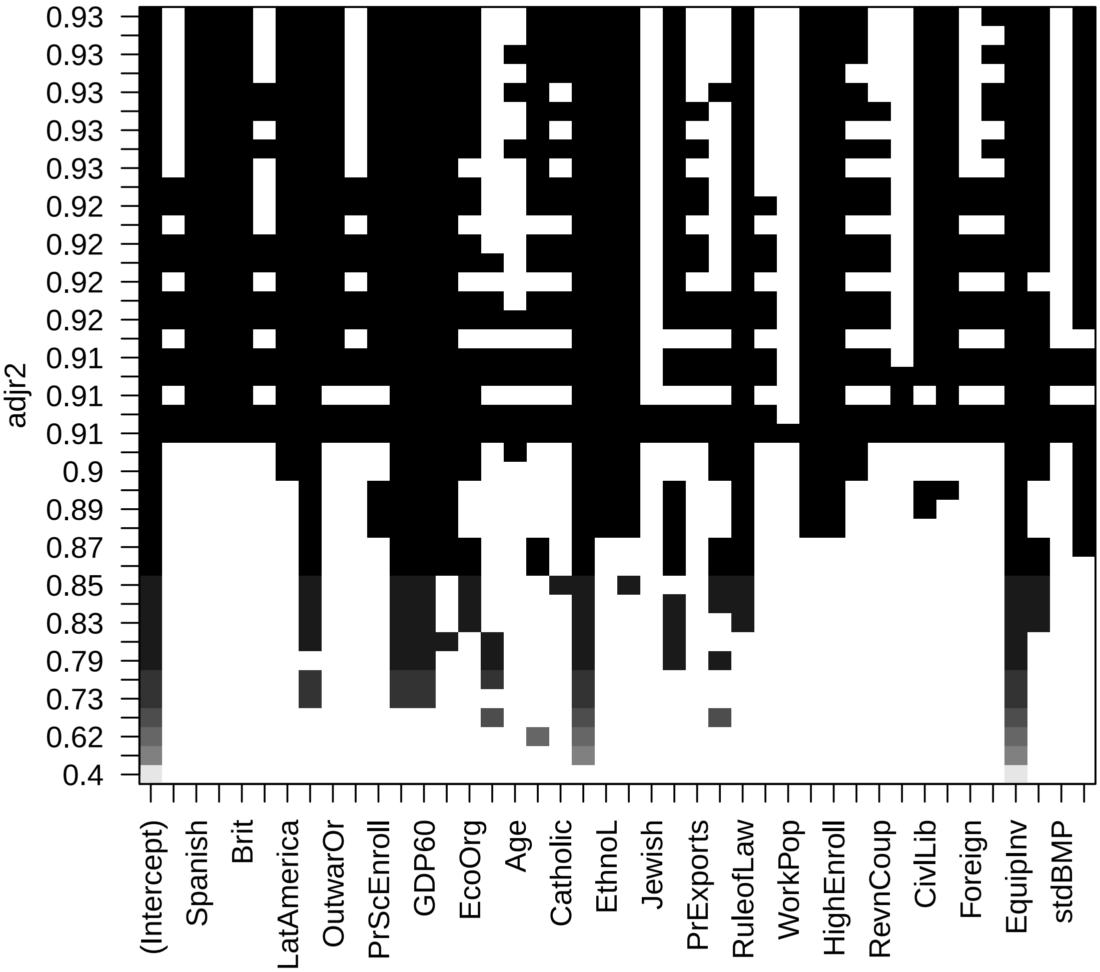

```r
which.max(summary(model1)$adjr2)
```

```
## [1] 27
```

```r
plot(model1, scale = c("r2"))
```

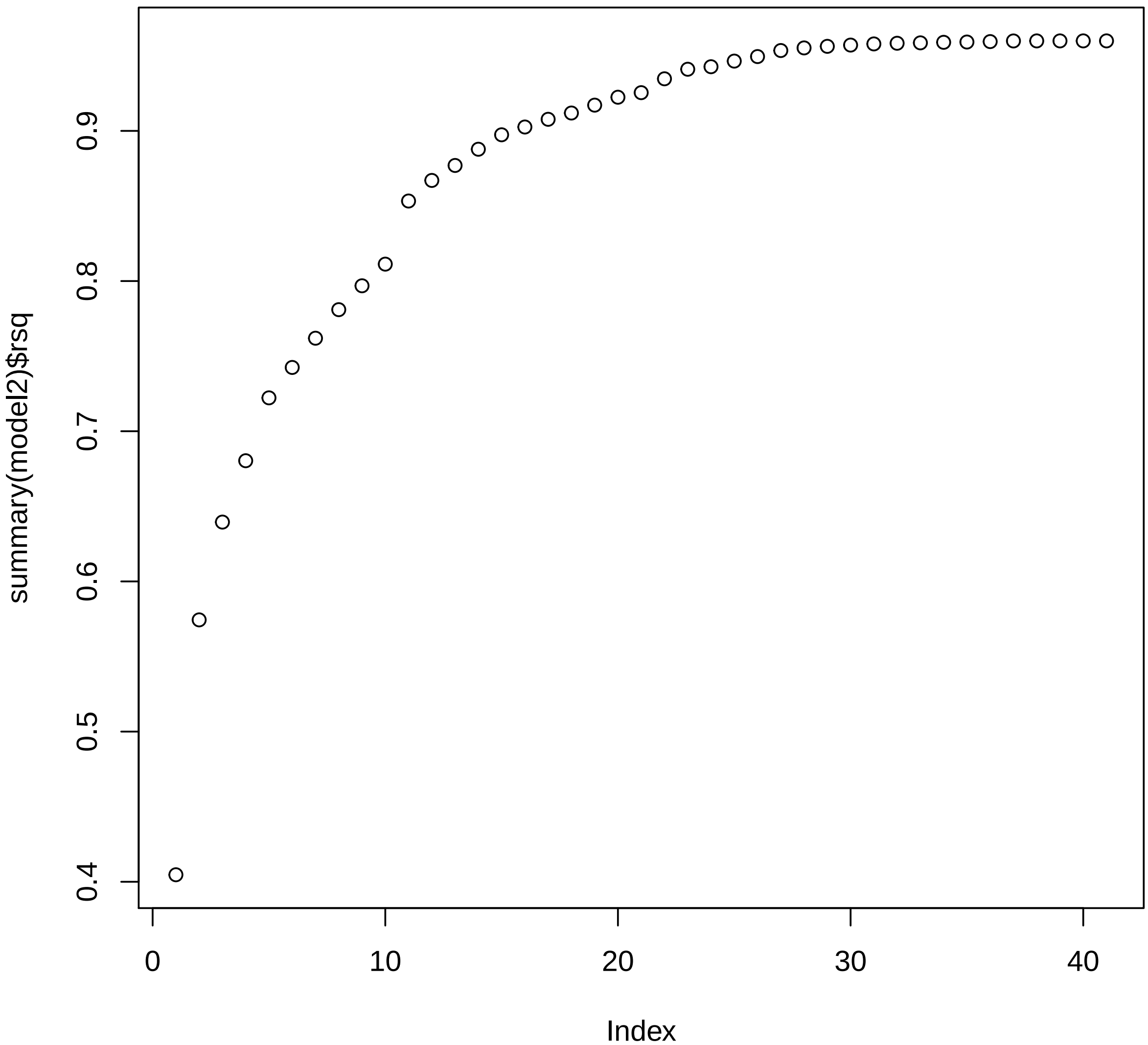



```r
plot(model1, scale = c("adjr2"))
```

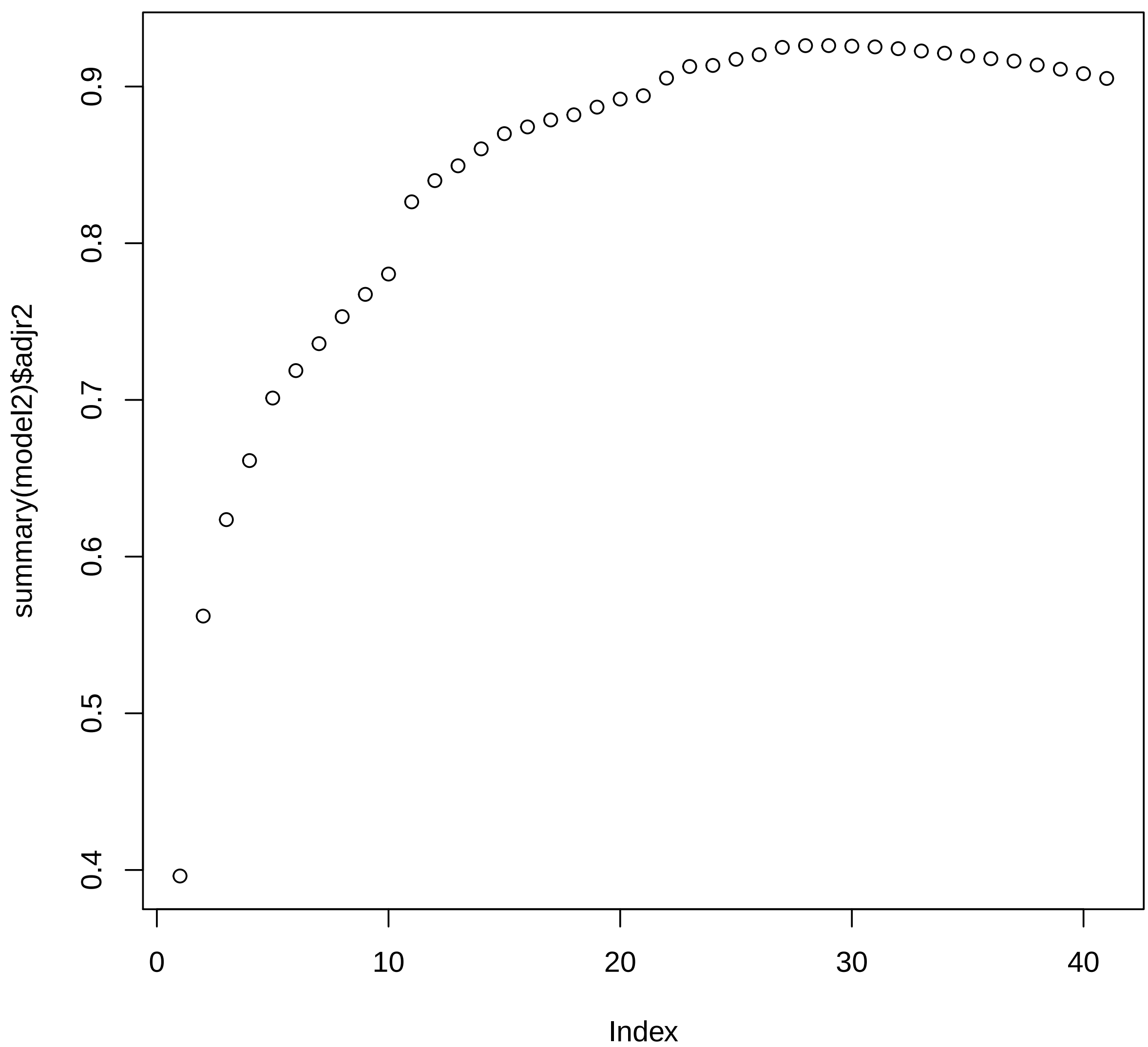


We next use the forward stepwise selection method which runs much faster as should be expected. Note that the results are not identical to what we obtained with the exhaustive selection approach.

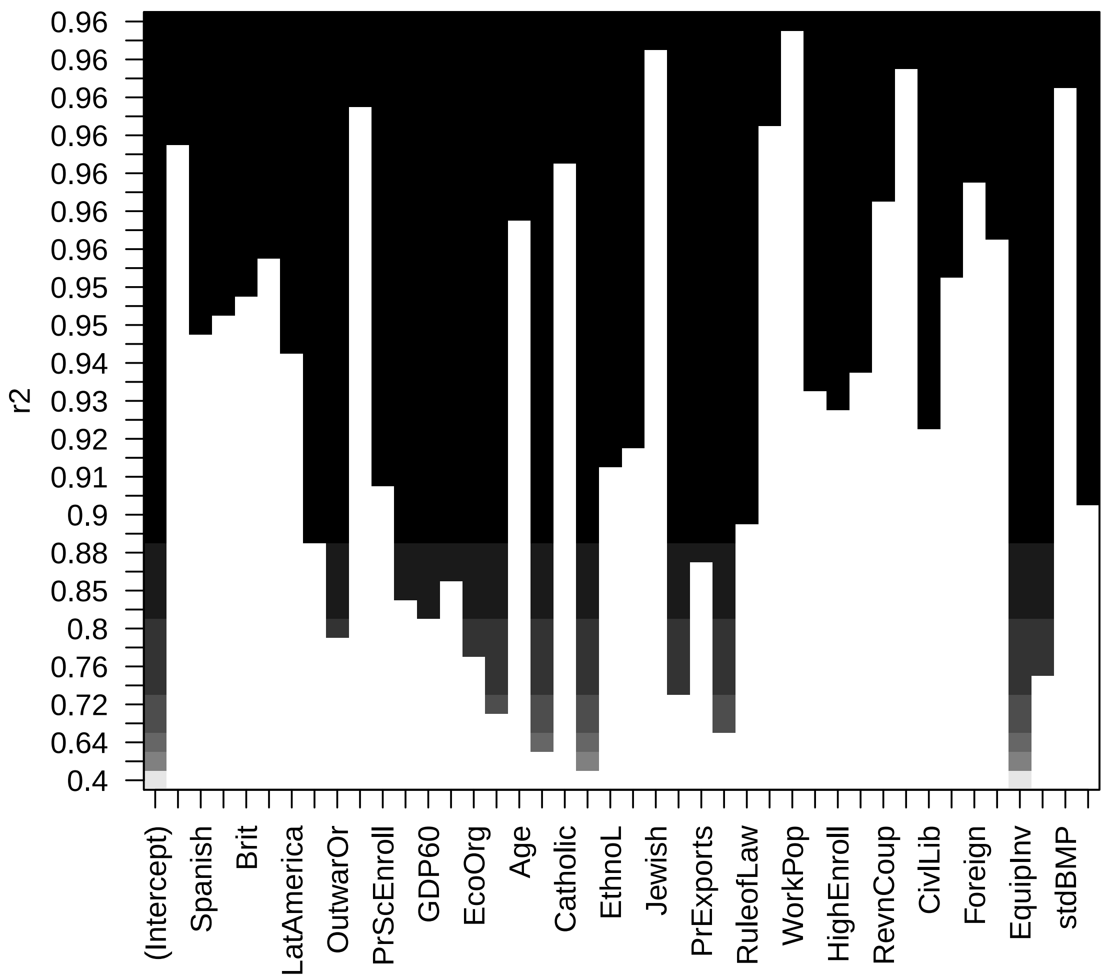
```
model2 <- regsubsets(y ~ ., data = eg1, nvmax = 41, method = "forward")

plot(summary(model2)$rsq)
```



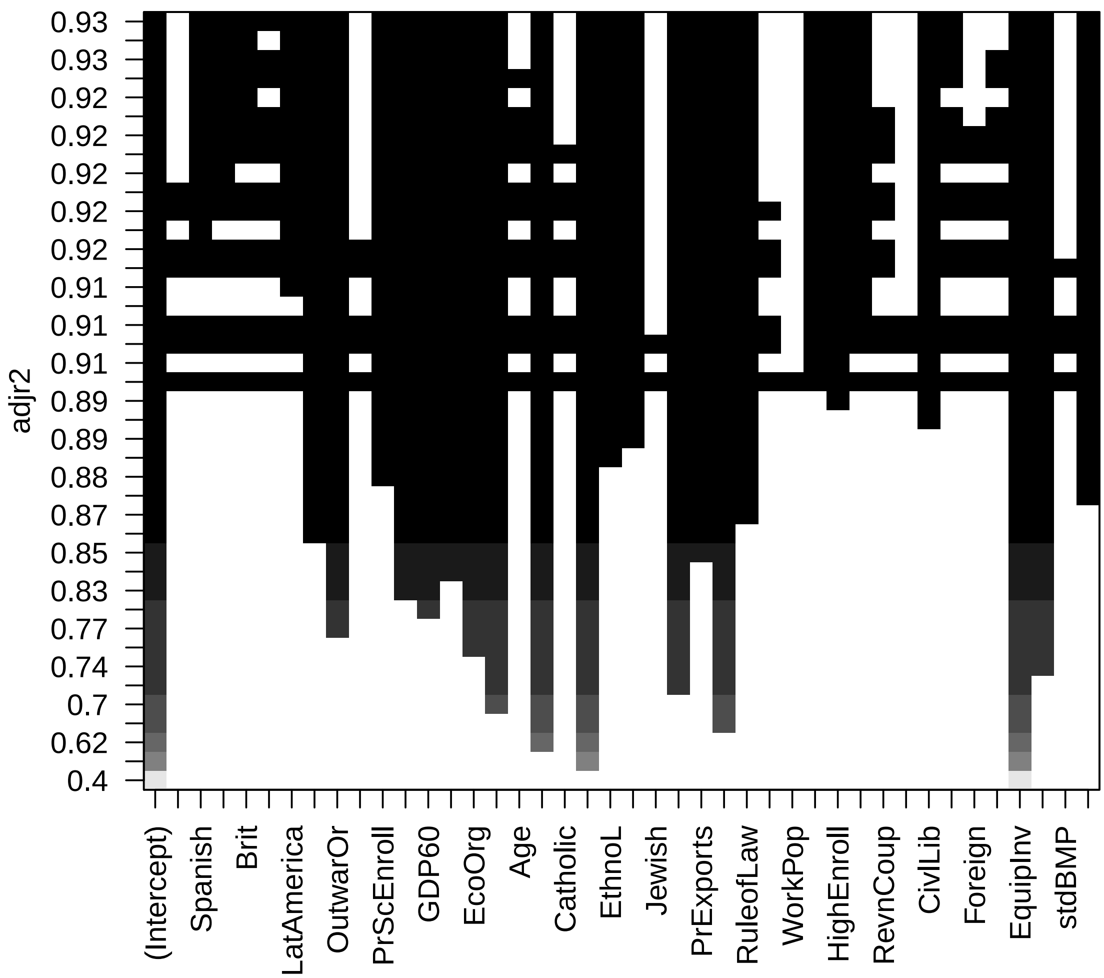

```r
plot(summary(model2)$adjr2)
```




```r
plot(model2, scale = c("r2"))
```




```r
plot(model2, scale = c("adjr2"))
```



Which variables are selected:

```
summary(model1)$which[27,]
summary(model2)$which[27,]
```

The results indicate that with model 1, we have
1) EquipInv,
2) Confucian, EquipInv,
3) Buddha, Confucian, EquipInv,
4) YrsOpen, Confucian, Protestants, EquipInv

while for model 2, we have
1) EquipInv,
2) Confucian, EquipInv,

3) Buddha, Confucian, EquipInv,
4) Buddha, Protestants, EquipInv, Confucian
and so on. The results are different from the two models.

LASSO model: The results indicate that for variables such as EquipInv, YrsOpen and Confucian for many values of lambda, these occur while some other variables such as Abslat do not show up as often. Such results help illustrate the reliability of possible predictors for economic growth and can also cast doubts on the robustness of the results for certain variables which might be proposed as being correlated with growth.

```r
library(glmnet)
```

```
## Loading required package: Matrix

## Loaded glmnet 4.0-2
```

```r
x <- as.matrix(eg1[,c(2:42)])
grid <- 10^seq(10, -2, length=100)
model3 <- glmnet(x, eg1$y, lambda = grid)
model3
```

```
##
## Call:  glmnet(x = x, y = eg1$y, lambda = grid)
##
##     Df %Dev    Lambda
## 1    0  0.0 1.000e+10
## 2    0  0.0 7.565e+09
## 3    0  0.0 5.722e+09
## 4    0  0.0 4.329e+09
## 5    0  0.0 3.275e+09
## 6    0  0.0 2.477e+09
## 7    0  0.0 1.874e+09
## 8    0  0.0 1.417e+09
## 9    0  0.0 1.072e+09
## 10   0  0.0 8.111e+08
## 11   0  0.0 6.136e+08
## 12   0  0.0 4.642e+08
## 13   0  0.0 3.511e+08
## 14   0  0.0 2.656e+08
## 15   0  0.0 2.009e+08
## 16   0  0.0 1.520e+08
## 17   0  0.0 1.150e+08
## 18   0  0.0 8.697e+07
## 19   0  0.0 6.579e+07
## 20   0  0.0 4.977e+07
## 21   0  0.0 3.765e+07
## 22   0  0.0 2.848e+07
## 23   0  0.0 2.154e+07
## 24   0  0.0 1.630e+07
## 25   0  0.0 1.233e+07
## 26   0  0.0 9.326e+06
```

```
## 27   0   0.0 7.055e+06
## 28   0   0.0 5.337e+06
## 29   0   0.0 4.037e+06
## 30   0   0.0 3.054e+06
## 31   0   0.0 2.310e+06
## 32   0   0.0 1.748e+06
## 33   0   0.0 1.322e+06
## 34   0   0.0 1.000e+06
## 35   0   0.0 7.565e+05
## 36   0   0.0 5.722e+05
## 37   0   0.0 4.329e+05
## 38   0   0.0 3.275e+05
## 39   0   0.0 2.477e+05
## 40   0   0.0 1.874e+05
## 41   0   0.0 1.417e+05
## 42   0   0.0 1.072e+05
## 43   0   0.0 8.111e+04
## 44   0   0.0 6.136e+04
## 45   0   0.0 4.642e+04
## 46   0   0.0 3.511e+04
## 47   0   0.0 2.656e+04
## 48   0   0.0 2.009e+04
## 49   0   0.0 1.520e+04
## 50   0   0.0 1.150e+04
## 51   0   0.0 8.697e+03
## 52   0   0.0 6.579e+03
## 53   0   0.0 4.977e+03
## 54   0   0.0 3.765e+03
## 55   0   0.0 2.848e+03
## 56   0   0.0 2.154e+03
## 57   0   0.0 1.630e+03
## 58   0   0.0 1.233e+03
## 59   0   0.0 9.330e+02
## 60   0   0.0 7.060e+02
## 61   0   0.0 5.340e+02
## 62   0   0.0 4.040e+02
## 63   0   0.0 3.050e+02
## 64   0   0.0 2.310e+02
## 65   0   0.0 1.750e+02
## 66   0   0.0 1.320e+02
## 67   0   0.0 1.000e+02
## 68   0   0.0 7.600e+01
## 69   0   0.0 5.700e+01
## 70   0   0.0 4.300e+01
## 71   0   0.0 3.300e+01
## 72   0   0.0 2.500e+01
## 73   0   0.0 1.900e+01
## 74   0   0.0 1.400e+01
## 75   0   0.0 1.100e+01
## 76   0   0.0 8.000e+00
## 77   0   0.0 6.000e+00
## 78   0   0.0 5.000e+00
## 79   0   0.0 4.000e+00
## 80   0   0.0 3.000e+00
```

```
## 81   0  0.0 2.000e+00
## 82   0  0.0 2.000e+00
## 83   0  0.0 1.000e+00
## 84   0  0.0 1.000e+00
## 85   0  0.0 1.000e+00
## 86   0  0.0 0.000e+00
## 87   0  0.0 0.000e+00
## 88   0  0.0 0.000e+00
## 89   0  0.0 0.000e+00
## 90   0  0.0 0.000e+00
## 91   0  0.0 0.000e+00
## 92   0  0.0 0.000e+00
## 93   0  0.0 0.000e+00
## 94   0  0.0 0.000e+00
## 95   0  0.0 0.000e+00
## 96   0  0.0 0.000e+00
## 97   0  0.0 0.000e+00
## 98   0  0.0 0.000e+00
## 99   0  0.0 0.000e+00
## 100  2 10.1 0.000e+00
```

```r
# for a large portion, we are not explaining any part for the data for diff lambda values
# at the end, only explained 10% of the null deviance with only 2 variables at the end
# hence this does not seem to be a good grid to look for


# let the R system choose the grid here instead of specifying it
# model3 issues may be perhaps actual lambda values were too small and we were looking at much larger l
model4 <- glmnet(x, eg1$y)
model4
```

```
##
## Call:  glmnet(x = x, y = eg1$y)
##
##    Df  %Dev    Lambda
## 1   0  0.00 0.0115300
## 2   1  6.87 0.0105100
## 3   2 13.30 0.0095730
## 4   3 19.31 0.0087230
## 5   3 26.69 0.0079480
## 6   3 32.82 0.0072420
## 7   3 37.90 0.0065990
## 8   4 42.67 0.0060120
## 9   4 46.81 0.0054780
## 10  4 50.25 0.0049920
## 11  4 53.10 0.0045480
## 12  5 55.67 0.0041440
## 13  5 57.92 0.0037760
## 14  7 60.01 0.0034400
## 15  7 62.46 0.0031350
## 16  9 64.55 0.0028560
## 17 10 66.56 0.0026030
## 18 10 68.33 0.0023710
## 19 11 69.86 0.0021610
```

```
## 20 12 71.49 0.0019690
## 21 13 73.00 0.0017940
## 22 13 74.28 0.0016350
## 23 14 75.46 0.0014890
## 24 15 76.58 0.0013570
## 25 17 77.91 0.0012360
## 26 19 79.34 0.0011270
## 27 20 81.10 0.0010270
## 28 20 82.63 0.0009353
## 29 21 83.90 0.0008522
## 30 23 85.01 0.0007765
## 31 24 85.99 0.0007075
## 32 24 86.86 0.0006447
## 33 26 87.64 0.0005874
## 34 26 88.39 0.0005352
## 35 26 89.00 0.0004877
## 36 26 89.50 0.0004444
## 37 27 89.94 0.0004049
## 38 28 90.34 0.0003689
## 39 29 90.80 0.0003361
## 40 30 91.22 0.0003063
## 41 30 91.79 0.0002791
## 42 30 92.28 0.0002543
## 43 30 92.68 0.0002317
## 44 32 93.02 0.0002111
## 45 32 93.36 0.0001924
## 46 34 93.64 0.0001753
## 47 35 93.91 0.0001597
## 48 35 94.22 0.0001455
## 49 35 94.48 0.0001326
## 50 34 94.71 0.0001208
## 51 35 94.89 0.0001101
## 52 35 95.05 0.0001003
## 53 35 95.19 0.0000914
## 54 37 95.30 0.0000833
## 55 37 95.40 0.0000759
## 56 36 95.48 0.0000691
## 57 36 95.54 0.0000630
## 58 36 95.60 0.0000574
## 59 36 95.64 0.0000523
## 60 36 95.68 0.0000476
## 61 36 95.71 0.0000434
## 62 36 95.74 0.0000396
## 63 36 95.76 0.0000360
## 64 38 95.78 0.0000328
## 65 40 95.81 0.0000299
## 66 41 95.84 0.0000273
## 67 41 95.86 0.0000248
## 68 41 95.88 0.0000226
## 69 41 95.90 0.0000206
## 70 41 95.92 0.0000188
## 71 41 95.93 0.0000171
## 72 41 95.94 0.0000156
## 73 41 95.95 0.0000142
```

```
## 74 41 95.95 0.0000130
## 75 41 95.96 0.0000118
## 76 41 95.96 0.0000108
## 77 41 95.97 0.0000098
## 78 40 95.97 0.0000089
## 79 40 95.97 0.0000081
## 80 40 95.98 0.0000074
## 81 40 95.98 0.0000068
## 82 40 95.98 0.0000062
## 83 40 95.98 0.0000056
## 84 40 95.98 0.0000051
## 85 40 95.98 0.0000047
## 86 40 95.99 0.0000042
```

```
model4$df
```

```
##  [1]  0  1  2  3  3  3  3  4  4  4  4  5  5  7  7  9 10 10 11 12 13 13 14 15 17
## [26] 19 20 20 21 23 24 24 26 26 26 26 27 28 29 30 30 30 30 32 32 34 35 35 35 34
## [51] 35 35 35 37 37 36 36 36 36 36 36 36 36 38 40 41 41 41 41 41 41 41 41 41 41
## [76] 41 41 40 40 40 40 40 40 40 40 40
```

```
model4$beta["EquipInv",]
```

```
##         s0         s1         s2         s3         s4         s5         s6
## 0.00000000 0.02989896 0.05202483 0.06760673 0.08042867 0.09212352 0.10277946
##         s7         s8         s9        s10        s11        s12        s13
## 0.11258867 0.12154191 0.12971174 0.13715581 0.14406270 0.15040049 0.15383321
##        s14        s15        s16        s17        s18        s19        s20
## 0.15867593 0.16258346 0.16444915 0.16555791 0.16661977 0.16734255 0.16832148
##        s21        s22        s23        s24        s25        s26        s27
## 0.16948025 0.17126770 0.17293008 0.17351524 0.17220683 0.16702669 0.16130824
##        s28        s29        s30        s31        s32        s33        s34
## 0.15651196 0.15187566 0.14705527 0.14234527 0.13738774 0.13193100 0.12706968
##        s35        s36        s37        s38        s39        s40        s41
## 0.12274067 0.11929709 0.11510558 0.11298039 0.11149575 0.11069796 0.10979416
##        s42        s43        s44        s45        s46        s47        s48
## 0.10902316 0.10822285 0.10826583 0.10805193 0.10978025 0.11122019 0.11265440
##        s49        s50        s51        s52        s53        s54        s55
## 0.11364832 0.11454541 0.11517577 0.11571790 0.11637044 0.11769020 0.11837771
##        s56        s57        s58        s59        s60        s61        s62
## 0.11911269 0.11981383 0.12046601 0.12107996 0.12163600 0.12214121 0.12259898
##        s63        s64        s65        s66        s67        s68        s69
## 0.12310262 0.12363149 0.12418720 0.12446285 0.12470910 0.12491215 0.12509626
##        s70        s71        s72        s73        s74        s75        s76
## 0.12525557 0.12540204 0.12553559 0.12566579 0.12577917 0.12588798 0.12597718
##        s77        s78        s79        s80        s81        s82        s83
## 0.12607745 0.12615294 0.12619169 0.12622857 0.12626553 0.12629465 0.12632607
##        s84        s85
## 0.12635177 0.12637656
```

```
model4$beta["YrsOpen",]
```

```
##            s0            s1            s2            s3            s4 
##  0.000000e+00  0.000000e+00  8.411755e-04  2.348983e-03  3.459478e-03 
##            s5            s6            s7            s8            s9 
##  4.469387e-03  5.389575e-03  6.018196e-03  6.519700e-03  6.974666e-03 
##           s10           s11           s12           s13           s14 
##  7.389210e-03  7.501796e-03  7.459716e-03  7.359030e-03  7.580682e-03 
##           s15           s16           s17           s18           s19 
##  7.776759e-03  7.780396e-03  7.624393e-03  7.531362e-03  7.530964e-03 
##           s20           s21           s22           s23           s24 
##  7.433922e-03  7.333904e-03  7.238579e-03  7.105824e-03  7.186242e-03 
##           s25           s26           s27           s28           s29 
##  6.986698e-03  6.950097e-03  7.060531e-03  7.172980e-03  7.283439e-03 
##           s30           s31           s32           s33           s34 
##  7.355836e-03  7.181306e-03  7.000231e-03  6.575529e-03  6.222930e-03 
##           s35           s36           s37           s38           s39 
##  5.895569e-03  5.633759e-03  5.344985e-03  4.899859e-03  4.378597e-03 
##           s40           s41           s42           s43           s44 
##  3.952915e-03  3.557960e-03  3.207090e-03  2.878671e-03  2.436668e-03 
##           s45           s46           s47           s48           s49 
##  1.985109e-03  1.678964e-03  1.473317e-03  1.286642e-03  1.069770e-03 
##           s50           s51           s52           s53           s54 
##  8.549662e-04  6.260712e-04  4.303385e-04  2.377157e-04  3.966491e-05 
##           s55           s56           s57           s58           s59 
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00 
##           s60           s61           s62           s63           s64 
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00 -3.471530e-05 
##           s65           s66           s67           s68           s69 
## -2.031494e-04 -4.074152e-04 -5.981505e-04 -7.729290e-04 -9.349521e-04 
##           s70           s71           s72           s73           s74 
## -1.081157e-03 -1.216336e-03 -1.332769e-03 -1.445648e-03 -1.548900e-03 
##           s75           s76           s77           s78           s79 
## -1.638620e-03 -1.721495e-03 -1.802933e-03 -1.871868e-03 -1.934607e-03 
##           s80           s81           s82           s83           s84 
## -1.986890e-03 -2.049210e-03 -2.087723e-03 -2.138088e-03 -2.175417e-03 
##           s85 
## -2.212684e-03
```

```r
model4$beta["Confucian",]
```

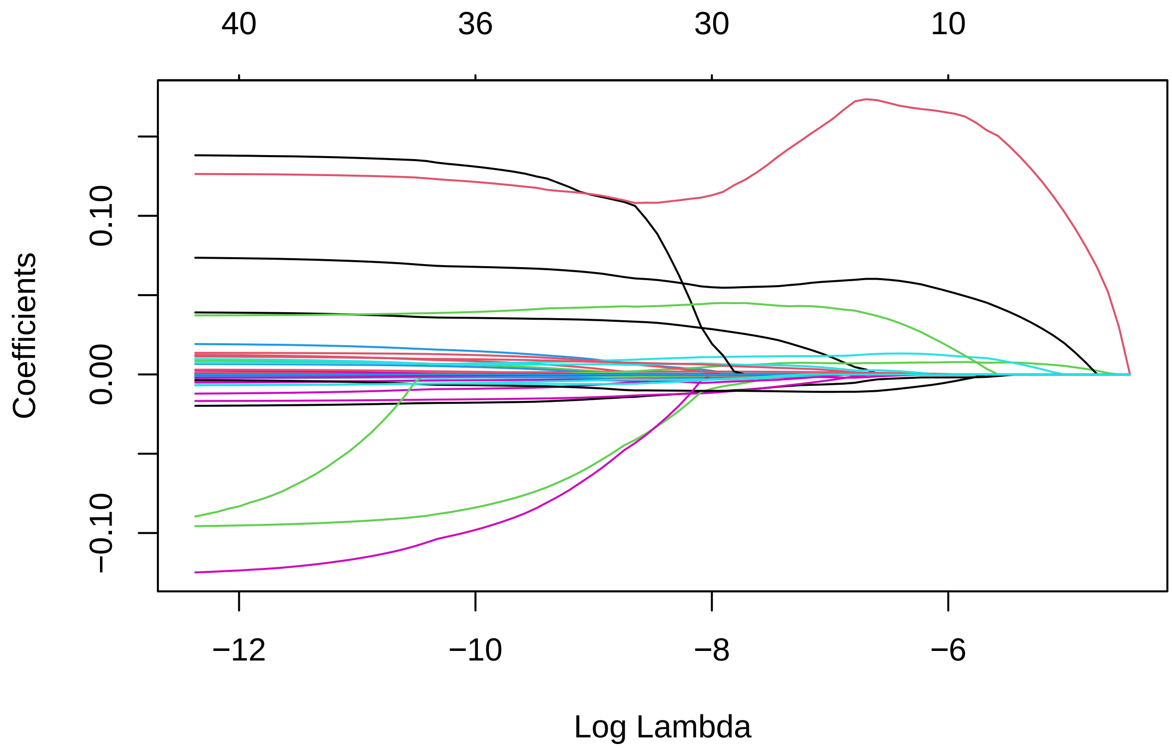
```
##           s0           s1           s2           s3           s4           s5 
## 0.0000000000 0.0000000000 0.0000000000 0.0001621431 0.0073470601 0.0138931647 
##           s6           s7           s8           s9          s10          s11 
## 0.0198577304 0.0247184313 0.0289443053 0.0327943465 0.0363023597 0.0394825701 
##          s12          s13          s14          s15          s16          s17 
## 0.0423720755 0.0451703608 0.0473677815 0.0494006357 0.0513695192 0.0532800898 
##          s18          s19          s20          s21          s22          s23 
## 0.0550396318 0.0568168456 0.0580045782 0.0590249207 0.0597445690 0.0602435836 
##          s24          s25          s26          s27          s28          s29 
## 0.0602429141 0.0596761196 0.0592215257 0.0587600550 0.0583418572 0.0577364260 
##          s30          s31          s32          s33          s34          s35 
## 0.0568774528 0.0562989043 0.0556491892 0.0554179214 0.0552196992 0.0550505400 
##          s36          s37          s38          s39          s40          s41 
## 0.0547964120 0.0546579435 0.0549502195 0.0555138745 0.0567310638 0.0577869720 
##          s42          s43          s44          s45          s46          s47
```

```
## 0.0587342490 0.0595534109 0.0601290032 0.0605148323 0.0613936418 0.0624443098
##          s48          s49          s50          s51          s52          s53
## 0.0635110808 0.0642446690 0.0649079907 0.0654469803 0.0659337479 0.0663722431
##          s54          s55          s56          s57          s58          s59
## 0.0666905089 0.0669304933 0.0671519438 0.0673599910 0.0675530982 0.0677332176
##          s60          s61          s62          s63          s64          s65
## 0.0678979832 0.0680485327 0.0681856232 0.0684322068 0.0688534260 0.0693838201
##          s66          s67          s68          s69          s70          s71
## 0.0698945900 0.0703152378 0.0706821885 0.0710215911 0.0713174773 0.0715927904
##          s72          s73          s74          s75          s76          s77
## 0.0718321509 0.0720705210 0.0722813913 0.0724716965 0.0726395166 0.0728104598
##          s78          s79          s80          s81          s82          s83
## 0.0729514088 0.0730629130 0.0731568200 0.0732688430 0.0733399001 0.0734313972
##          s84          s85
## 0.0735005287 0.0735691984
```

```r
model4$beta["Abslat",]
```

```
##            s0            s1            s2            s3            s4
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##            s5            s6            s7            s8            s9
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s10           s11           s12           s13           s14
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s15           s16           s17           s18           s19
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s20           s21           s22           s23           s24
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s25           s26           s27           s28           s29
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s30           s31           s32           s33           s34
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s35           s36           s37           s38           s39
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s40           s41           s42           s43           s44
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s45           s46           s47           s48           s49
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s50           s51           s52           s53           s54
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s55           s56           s57           s58           s59
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00
##           s60           s61           s62           s63           s64
##  0.000000e+00  0.000000e+00  0.000000e+00  0.000000e+00 -1.622437e-06
##           s65           s66           s67           s68           s69
## -7.518398e-06 -1.431802e-05 -2.042576e-05 -2.591297e-05 -3.102535e-05
##           s70           s71           s72           s73           s74
## -3.556897e-05 -3.979984e-05 -4.337126e-05 -4.690859e-05 -5.016168e-05
##           s75           s76           s77           s78           s79
## -5.296114e-05 -5.555386e-05 -5.806661e-05 -6.007978e-05 -6.195865e-05
##           s80           s81           s82           s83           s84
## -6.347919e-05 -6.536241e-05 -6.648517e-05 -6.799466e-05 -6.910986e-05
##           s85
## -7.022663e-05
```

```r
plot(model4, xvar = "lambda")
```




```r
#model4$beta

# find the set beta coefficient for all lambdas
# whenever a beta is non zero, it gives |
model4$beta !=0
```

```
## 41 x 86 sparse Matrix of class "lgCMatrix"

##    [[ suppressing 86 column names 's0', 's1', 's2' ... ]]

##
## Abslat     . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## Spanish    . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## French     . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## Brit       . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## WarDummy   . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | | | | |
## LatAmerica . . . . . . . . . . . . . . . . . . . | | | | | | | | | | | | | | |
## SubSahara  . . . . . . . . . . . | | | | | | | | | | | | | | | | | | | | | | |
## OutwarOr   . . . . . . . . . . . . . . . . . . . . . . . . . . | | | | | | | |
## Area       . . . . . . . . . . . . . . . . . . . . . . | | | | | | | | | | | |
## PrScEnroll . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## LifeExp    . . . . . . . . . . . . . . . . . . . . . . . . . | | | | | | | | |
```

```
## GDP60       . . . . . . . . . . . . . . . . . . . . . . . . | | | | | | | | | |
## Mining      . . . . . . . . . . . . . . . . . . . . . . . | | | | | | | | | | |
## EcoOrg      . . . . . . . . . . . . . . . . | | | | | | | | | | | | | | | | | |
## YrsOpen     . . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Age         . . . . . . . . . . . . . . . . . . . . | | | | | | | | | | | | | |
## Buddha      . . . . . . . | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Catholic    . . . . . . . . . . . . . . . . . . . . . . . . . | . . . . . . . .
## Confucian   . . . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## EthnoL      . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## Hindu       . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | |
## Jewish      . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## Muslim      . . . . . . . . . . . . . . . . . . | | | | | | | | | | | | | | | |
## PrExports   . . . . . . . . . . . . . . . . . . . . . . . . . . | | | | | | | |
## Protestants . . . . . . . . . . . . . | | | | | | | | | | | | | | | | | | | | |
## RuleofLaw   . . . . . . . . . . . . . . . . . . . . . . . . | | | | | | | | | |
## Popg        . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## WorkPop     . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | | | | |
## LabForce    . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## HighEnroll  . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## PublEdupct  . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## RevnCoup    . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## PolRights   . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | |
## CivlLib     . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## English     . . . . . . . . . . . . . . . . . . . . . . . . . . . . | | | | | |
## Foreign     . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
## RFEXDist    . . . . . . . . . . . . . . . | | | | | | | | | | | | | | | | | | |
## EquipInv    . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## NequipInv   . . . . . . . . . . . . . | | | | | | | | | | | | | | | | | | | | |
## stdBMP      . . . . . . . . . . . . . . . | | | | | | | | | | | | | | | | | | |
## BlMktPm     . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | | | |
##
## Abslat      . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | | | |
## Spanish     . . . . . . . . . | | | | | | | | | | | | | | | | | | | | | | | | |
## French      . . . . . . . . . . . | | | | | | | | | | | | | | | | | | | | | | |
## Brit        . . . . . . . . . . . . | | | | | | | | | | | | | | | | | | | | | |
## WarDummy    | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## LatAmerica  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## SubSahara   | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## OutwarOr    | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Area        | . . . . . . . . . . . . . . . . . . . . . . . . . . . . | | | | |
## PrScEnroll  . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## LifeExp     | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## GDP60       | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Mining      | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## EcoOrg      | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## YrsOpen     | | | | | | | | | | | | | | | | | | | | | . . . . . . . . . | | | |
## Age         | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Buddha      | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Catholic    . . . . . . . . . | | | | | | . . . . . . . . . . . . . . | | | | |
## Confucian   | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## EthnoL      . . . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Hindu       | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Jewish      . . . . . . . . . . . . . . . . . . . | | | | | | | | | | | | | | |
## Muslim      | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
```

```
## PrExports  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Protestants | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## RuleofLaw  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Popg       . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | | |
## WorkPop    | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## LabForce   . . . . . | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## HighEnroll . . . . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## PublEdupct . . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## RevnCoup   . . . . . . . . . . . . . . . . | | | | | | | | | | | | | | | | | |
## PolRights  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## CivlLib    . . . . . . . . . . . | | | | | | | | | | | | | | | | | | | | | | |
## English    | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## Foreign    . . . . . . . . . . . . . . . . . . | | | | | | | | | | | | | | | |
## RFEXDist   | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## EquipInv   | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## NequipInv  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## stdBMP     | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
## BlMktPm    | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
##
## Abslat     | | | | | | | | | | | | | | | | | |
## Spanish    | | | | | | | | | | | | | | | | | |
## French     | | | | | | | | | | | | | | | | | |
## Brit       | | | | | | | | | | | | | | | | | |
## WarDummy   | | | | | | | | | | | | | | | | | |
## LatAmerica | | | | | | | | | | | | | | | | | |
## SubSahara  | | | | | | | | | | | | | | | | | |
## OutwarOr   | | | | | | | | | | | | | | | | | |
## Area       | | | | | | | | | | | | | | | | | |
## PrScEnroll | | | | | | | | | | | | | | | | | |
## LifeExp    | | | | | | | | | | | | | | | | | |
## GDP60      | | | | | | | | | | | | | | | | | |
## Mining     | | | | | | | | | | | | | | | | | |
## EcoOrg     | | | | | | | | | | | | | | | | | |
## YrsOpen    | | | | | | | | | | | | | | | | | |
## Age        | | | | | | | | | | | | | | | | | |
## Buddha     | | | | | | | | | | | | | | | | | |
## Catholic   | | | | | | | | | | | | | | | | | |
## Confucian  | | | | | | | | | | | | | | | | | |
## EthnoL     | | | | | | | | | | | | | | | | | |
## Hindu      | | | | | | | | | | | | | | | | | |
## Jewish     | | | | | | | | | | | | | | | | | |
## Muslim     | | | | | | | | | | | | | | | | | |
## PrExports  | | | | | | | | | | | | | | | | | |
## Protestants | | | | | | | | | | | | | | | | | |
## RuleofLaw  | | | | | | | | | | | | | | | | | |
## Popg       | | | | | | | | | | | | | | | | | |
## WorkPop    | | | | | | | | | | | | | | | | | |
## LabForce   | | | | | | | | | | | | | | | | | |
## HighEnroll | | | | | | | | | | | | | | | | | |
## PublEdupct | | | | | | | | | | | | | | | | | |
## RevnCoup   | | | | | | | | | | | | | | | | | |
## PolRights  | | | | | | | | | . . . . . . . . .
## CivlLib    | | | | | | | | | | | | | | | | | |
## English    | | | | | | | | | | | | | | | | | |
```

```
## Foreign      | | | | | | | | | | | | | | | | | |
## RFEXDist     | | | | | | | | | | | | | | | | | |
## EquipInv     | | | | | | | | | | | | | | | | | |
## NequipInv    | | | | | | | | | | | | | | | | | |
## stdBMP       | | | | | | | | | | | | | | | | | |
## BlMktPm      | | | | | | | | | | | | | | | | | |
```