

# Cronbach's alpha and FAs on scales

## Contents

<b>Kahan et al (2007) scale</b>	<b>2</b>
Cronbach's alpha test on the Kahan et al (2007) scale . . . . .	2
<b>CFA on the Kahan scale</b>	<b>3</b>
<b>Eco-pol value scale</b>	<b>5</b>
Cronbach's Alpha Test on Scale 1: Economic -Political Values of the Perceiver . . . . .	5
Cronbach's alpha test on Scale 2 : Eco-Pol Characteristics of the Technology - Nuclear Energy . .	6
Cronbach's Alpha Test on the Combined Scale. . . . .	6
<b>FA on All Ecopol Variables (except systems of governance)</b>	<b>7</b>
Two factor solution : MR1 people centered development and MR2 nationalist development . . . .	7
<b>FA on Scale 1 - only eco-pol values of the perceiver scale.</b>	<b>10</b>
<b>Factor analysis on Scale 2 - Eco-Pol characteristics of the technology - Nuclear Energy</b>	<b>14</b>
<b>Solar - FA 2 factor solution</b>	<b>16</b>
<b>Coal - FA 2 factor solution</b>	<b>18</b>
<b>Appendix1</b>	<b>20</b>
<b>Appendix2</b>	<b>21</b>

## Kahan et al (2007) scale

### Cronbach's alpha test on the Kahan et al (2007) scale

#### Kahan et al (2007) scale

##### Individualism - Communitarism

- **K\_IINTRFER** The government interferes far too much in our everyday lives.
- **K\_IPRIVACY** The government should stop telling people how to live their lives.
- **K\_IPROTECT** It's not the government's business to try to protect people from themselves.
- **K\_SHARM** Sometimes the government needs to make laws that keep people from hurting themselves.
- **K\_SLIMCHOI** The government should put limits on the choices individuals can make so they don't get in the way of what's good for society.
- **K\_SPROTECT** The government should do more to advance society's goals, even if that means limiting the freedom and choices of individuals.

##### Hierarchy -Egalitarianism

- **K\_HEQUAL** We have gone too far in pushing equal rights in this country.
- **K\_HREVDIS1** Nowadays it seems like there is just as much discrimination against upper castes as there is against Dalits.
- **K\_EDISCRIM** Discrimination against minorities is still a very serious problem in our society.
- **K\_ERADEQ1** We need to dramatically reduce inequalities between the rich and the poor.
- **K\_EWEALTH** Our society would be better off if the distribution of wealth was more equal.
- **K\_ERADEQ2** We need to dramatically reduce inequalities between men and women.

KahanI weak alpha = 0.29, KahanS strong alpha = 0.71 Hierarchy -Egalitarianism strong alpha = 0.71  
reasons for this could be that the individualism items are not well adapted to the Indian population final  
items alpha = 0.75

## CFA on the Kahan scale

Since this a well used scale with theoretical basis for factor distinctions and there are also previous studies that used the same scale I did CFA not exploratory FA.

```
## lavaan 0.6.15 ended normally after 16 iterations
##
##      Estimator                      ML
##      Optimization method          NLMINB
##      Number of model parameters      13
##
##      Number of observations          749
##
## Model Test User Model:
##
##      Test statistic                  42.022
##      Degrees of freedom                8
##      P-value (Chi-square)             0.000
##
## Model Test Baseline Model:
##
##      Test statistic                  1057.597
##      Degrees of freedom               15
##      P-value                         0.000
##
## User Model versus Baseline Model:
##
##      Comparative Fit Index (CFI)      0.967
##      Tucker-Lewis Index (TLI)        0.939
##
## Loglikelihood and Information Criteria:
##
##      Loglikelihood user model (H0)    -6375.464
##      Loglikelihood unrestricted model (H1) -6354.452
##
##      Akaike (AIC)                    12776.927
##      Bayesian (BIC)                   12836.971
##      Sample-size adjusted Bayesian (SABIC) 12795.691
##
## Root Mean Square Error of Approximation:
##
##      RMSEA                           0.075
##      90 Percent confidence interval - lower 0.054
##      90 Percent confidence interval - upper 0.099
##      P-value H_0: RMSEA <= 0.050        0.027
##      P-value H_0: RMSEA >= 0.080        0.396
##
## Standardized Root Mean Square Residual:
##
##      SRMR                             0.042
##
## Parameter Estimates:
##
##      Standard errors                  Standard
##      Information                      Expected
```

```

## Information saturated (h1) model          Structured
##
## Latent Variables:
##      Estimate Std.Err z-value P(>|z|) Std.lv Std.all
##      KahanS =~
##      K_SHARM      0.726   0.044  16.405   0.000   0.726   0.639
##      K_SLIMCHOI    0.938   0.047  20.057   0.000   0.938   0.787
##      K_SPROTECT    0.714   0.046  15.605   0.000   0.714   0.608
##      KahanH =~
##      K_ERADEQ1     0.750   0.039  19.198   0.000   0.750   0.748
##      K_EWEALTH     0.642   0.045  14.323   0.000   0.642   0.560
##      K_ERADEQ2     0.782   0.042  18.656   0.000   0.782   0.726
##
## Covariances:
##      Estimate Std.Err z-value P(>|z|) Std.lv Std.all
##      KahanS ~~
##      KahanH      0.528   0.040  13.121   0.000   0.528   0.528
##
## Variances:
##      Estimate Std.Err z-value P(>|z|) Std.lv Std.all
##      .K_SHARM      0.764   0.053  14.457   0.000   0.764   0.592
##      .K_SLIMCHOI    0.542   0.062   8.700   0.000   0.542   0.381
##      .K_SPROTECT    0.868   0.057  15.293   0.000   0.868   0.630
##      .K_ERADEQ1     0.441   0.042  10.466   0.000   0.441   0.440
##      .K_EWEALTH     0.903   0.055  16.369   0.000   0.903   0.687
##      .K_ERADEQ2     0.548   0.048  11.399   0.000   0.548   0.473
##      KahanS        1.000           1.000   1.000
##      KahanH        1.000           1.000   1.000

```

## Eco-pol value scale

### Scale 1 : The economic -political values of the perceiver

- **DECISIONDECEN** Local politicians shouldn't have to ask permission from the central government to implement policies
- **DECISIONCEN** Laws and policies would be implemented more smoothly if more power lay with the central government.
- **SYSTEMTOTAL** It is good to have a strong leader who does not have to bother with elections.
- **SYSTEMTECHNO** Experts, not the government, should make decisions according to what they think is best for the country.
- **SYSTEMDEMO** It is very important to have a democratic political system because it ensures that no individual leader has too much power.
- **SYSTEMRELIGION** There should be a system governed by religious law.
- **INDUSTRYSMALL** Large corporations are destroying the local industries in India and benefiting only a handful of people.
- **INDUSTRYLARGE** Large scale industries are required for the development of the country that will benefit everyone
- **ECONOMYLOCAL** India would be better off if foreign companies didn't come to here
- **ECONOMYGLOBAL** Foreign companies have led to a range of benefits for the Indian people and society
- **DEVOVERENV** Economic growth and creating jobs should be prioritized over environmental protection
- **ENVOVERDEV** Polluting industries that spoil the environment should be shut down even if it costs people their jobs
- **OWNERPVT** All businesses and industries should be owned privately
- **OWNERPUB** The government should own most large businesses and industries
- **OWNERREG** Regardless of ownership, the government should pass strong regulations and implement them
- **OWNERNOREG** There is too much red-tape and the government should not interfere with businesses and industries
- **WEALTHLIM** A limit should be put to how much wealth a person can amass
- **MECHANISATION** Rapid mechanization of work is taking away jobs from workers in this country

### Cronbach's Alpha Test on Scale 1: Economic -Political Values of the Perceiver

```
##
## Reliability analysis
## raw_alpha std.alpha G6(smc) average_r S/N ase mean sd median_r
## 0.75 0.76 0.79 0.15 3.2 0.014 3.5 0.56 0.16
```

## Scale 2 : Economic and Political characteristics of the energy technology scale - Nuclear energy

- **DISPLACENUCLER** Nuclear energy is leading to displacement of people from their land
- **POLLUTENUCLEAR** Nuclear energy increases pollution of air/water/land
- **HEALTHNUCLEAR** Nuclear energy poses a great risk to the health of people living around it
- **JOBSNUCLEAR** Nuclear energy will bring jobs to the local community
- **BEAUTYNUCLEAR** Nuclear energy spoils the natural beauty of the landscape
- **PRIDENUCLEAR** I would be proud if my community used nuclear energy
- **NPRIDENUCLEAR** Nuclear energy is a mark of pride for our nation
- **DEVNUCLEAR** Nuclear energy pushes forward the country's development
- **PROSPERNUCLEAR** Nuclear energy brings economic prosperity to the surrounding regions
- **RELYNUCLEAR** I don't like the idea that I have to rely on the government for electricity from nuclear energy

## Cronbach's alpha test on Scale 2 : Eco-Pol Characteristics of the Technology - Nuclear Energy

```
##
## Reliability analysis
## raw_alpha std.alpha G6(smc) average_r S/N ase mean sd median_r
## 0.68 0.69 0.76 0.18 2.2 0.021 3.4 0.61 0.19
```

## Cronbach's Alpha Test on the Combined Scale.

```
##
## Reliability analysis
## raw_alpha std.alpha G6(smc) average_r S/N ase mean sd median_r
## 0.8 0.8 0.84 0.14 4 0.014 3.3 0.49 0.13
```

## FA on All Ecopol Variables (except systems of governance)

**Two factor solution : MR1 people centered development and MR2 nationalist development**

### **MR1 People Centered Development: Pdevelop**

HEALTHNUCLEAR - Nuclear energy poses a great risk to the health of people living around it.

BEAUTYNUCLEAR - Nuclear energy spoils the natural beauty of the landscape.

MECHANISATION - Rapid mechanization of work is taking away jobs from workers in this country.

INDUSTRYSMALL - Large corporations are destroying the local industries in India and benefiting only a handful of people.

DISPLACENUCLEAR- Nuclear energy is leading to displacement of people from their land.

POLLUTENUCLEAR- Nuclear energy increases pollution of air/water/land.

OWNERREG- Regardless of ownership, the government should pass strong regulations and implement them.

### **MR2 Nationalist Development: Ndevelop**

DEVNUCLEAR - Nuclear energy pushes forward the country's development.

PRIDENUCLEAR- I would be proud if my community used nuclear energy.

NPRIDENUCLEAR- Nuclear energy is a mark of pride for our nation.

PROSPERNUCLEAR- Nuclear energy brings economic prosperity to the surrounding regions.

INDUSTRYLARGE- Large scale industries are required for the development of the country that will benefit everyone.

```
## Factor Analysis using method = minres
## Call: fa(r = ecopolall, nfactors = 2, rotate = "varimax")
## Standardized loadings (pattern matrix) based upon correlation matrix
##           item  MR1  MR2    h2  u2 com
## HEALTHNUCLEAR   17  0.67    0.4460 0.55 1.0
## BEAUTYNUCLEAR   19  0.62    0.3869 0.61 1.0
## DISPLACENUCLEAR  15  0.58    0.3718 0.63 1.2
## POLLUTENUCLEAR  16  0.58    0.3355 0.66 1.0
## OWNERREG        14  0.56    0.3245 0.68 1.1
## MECHANISATION    2  0.54    0.3318 0.67 1.3
## INDUSTRYSMALL    6  0.52    0.2743 0.73 1.0
## ENVOVERDEV       9    0.1554 0.84 1.1
## OWNERPUB        13    0.1555 0.84 1.2
## SYSTEMDEMO      25    0.2159 0.78 2.0
## DECISIONDECEN    3    0.1008 0.90 1.0
## WEALTHLIM        1    0.1576 0.84 2.0
## ECONOMYLOCAL     8    0.0100 0.99 1.9
## DEVNUCLEAR      22    0.64 0.4424 0.56 1.1
## PRIDENUCLEAR     20    0.63 0.4551 0.54 1.3
## NPRIDENUCLEAR    21    0.58 0.3684 0.63 1.2
## PROSPERNUCLEAR   23    0.56 0.3300 0.67 1.1
## RELYNUCLEAR      24    0.1855 0.81 1.0
## JOBSNUCLEAR      18    0.2223 0.78 1.5
## INDUSTRYLARGE     5    0.1904 0.81 1.6
## ECONOMYGLOBAL     7    0.2117 0.79 2.0
## OWNERNOREG      12    0.1015 0.90 1.4
```

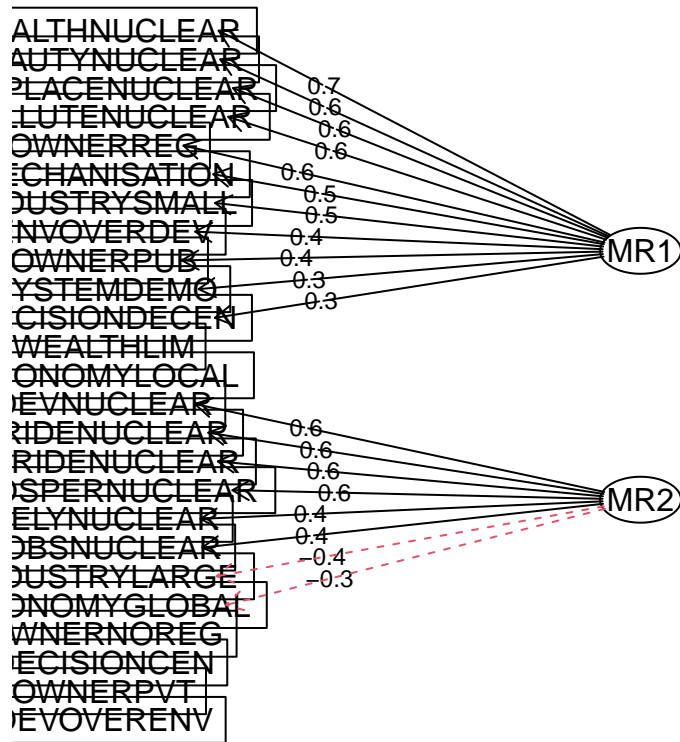
```

## DECISIONCEN      4      0.0996 0.90 1.7
## OWNERPVT        11      0.0407 0.96 1.9
## DEVOVERENV      10      0.0087 0.99 1.0
##
##              MR1  MR2
## SS loadings      3.37 2.55
## Proportion Var    0.13 0.10
## Cumulative Var    0.13 0.24
## Proportion Explained 0.57 0.43
## Cumulative Proportion 0.57 1.00
##
## Mean item complexity = 1.3
## Test of the hypothesis that 2 factors are sufficient.
##
## The degrees of freedom for the null model are 300 and the objective function was 6.13 with Chi Sq
## The degrees of freedom for the model are 251 and the objective function was 2.28
##
## The root mean square of the residuals (RMSR) is 0.07
## The df corrected root mean square of the residuals is 0.08
##
## The harmonic number of observations is 440 with the empirical chi square 1347.65 with prob < 2.4
## The total number of observations was 440 with Likelihood Chi Square = 978.9 with prob < 1.6e-86
##
## Tucker Lewis Index of factoring reliability = 0.626
## RMSEA index = 0.081 and the 90 % confidence intervals are 0.076 0.087
## BIC = -548.88
## Fit based upon off diagonal values = 0.85
## Measures of factor score adequacy
##              MR1  MR2
## Correlation of (regression) scores with factors 0.91 0.88
## Multiple R square of scores with factors 0.83 0.78
## Minimum correlation of possible factor scores 0.65 0.57

```



## Factor Analysis



## FA on Scale 1 - only eco-pol values of the perceiver scale.

Four Factor Solution -

### MR1 Problems of industrialisation

MECHANISATION- Rapid mechanization of work is taking away jobs from workers in this country

OWNERREG- Regardless of ownership, the government should pass strong regulations and implement them.

WEALTHLIM- A limit should be put to how much wealth a person can amass

### MR3 Local Economy And Decision Making

INDUSTRYSMALL- Large corporations are destroying the local industries in India and benefiting only a handful of people

ECONOMYLOCAL- India would be better off if foreign companies didn't come to here

DECISIONDECEN- Local politicians shouldn't have to ask permission from the central government to implement policies

### MR4 Centralised and Large Industry

DECISIONCEN- Laws and policies would be implemented more smoothly if more power lay with the central government

ECONOMYGLOBAL- Foreign companies have led to a range of benefits for the Indian people and society

OWNERNOREG- There is too much red-tape and the government should not interfere with businesses and industries

INDUSTRYLARGE- Large scale industries are required for the development of the country that will benefit everyone

### MR2 Development and Business Ownership

DEVOVERENV- Economic growth and creating jobs should be prioritized over environmental protection

OWNERPVT- All businesses and industries should be owned privately

OWNERPUB- The government should own most large businesses and industries

ENVOVERDEV- Polluting industries that spoil the environment should be shut down even if it costs people their jobs

```
##
## Reliability analysis
## Call: alpha(x = ecopolval, check.keys = TRUE)
##
##      raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
##           0.71      0.72    0.74      0.15 2.5 0.016  3.5 0.58      0.16
##
##      95% confidence boundaries
##           lower alpha upper
## Feldt      0.68  0.71  0.74
## Duhachek  0.68  0.71  0.74
##
## Reliability if an item is dropped:
##      raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
## WEALTHLIM      0.69      0.69    0.72      0.15 2.2  0.017 0.014  0.15
## MECHANISATION  0.69      0.69    0.72      0.15 2.3  0.017 0.014  0.15
## INDUSTRYSMALL  0.68      0.69    0.71      0.15 2.2  0.017 0.014  0.15
## ECONOMYGLOBAL- 0.69      0.70    0.72      0.15 2.3  0.017 0.014  0.15
```

```

## ENVOVERDEV      0.68      0.69      0.71      0.14 2.2      0.018 0.014 0.15
## OWNERNOREG-     0.70      0.71      0.73      0.16 2.4      0.016 0.013 0.17
## OWNERPUB        0.67      0.68      0.70      0.14 2.1      0.018 0.013 0.14
## OWNERREG        0.68      0.69      0.71      0.15 2.2      0.017 0.014 0.15
## DECISIONDECEN   0.70      0.71      0.73      0.16 2.4      0.016 0.015 0.17
## DECISIONCEN-    0.70      0.71      0.73      0.16 2.4      0.016 0.014 0.17
## INDUSTRYLARGE-   0.70      0.70      0.72      0.15 2.3      0.017 0.014 0.16
## ECONOMYLOCAL     0.70      0.71      0.73      0.16 2.4      0.016 0.014 0.17
## DEVOVERENV-     0.72      0.72      0.74      0.17 2.6      0.015 0.012 0.17
## OWNERPVT        0.72      0.73      0.75      0.17 2.7      0.015 0.011 0.18

```

```
##
```

```
## Item statistics
```

```

##          n raw.r std.r r.cor r.drop mean  sd
## WEALTHLIM    721  0.53  0.53  0.49  0.401  3.7 1.3
## MECHANISATION 721  0.50  0.52  0.47  0.386  4.0 1.1
## INDUSTRYSMALL 721  0.54  0.54  0.50  0.408  3.5 1.3
## ECONOMYGLOBAL- 721  0.48  0.49  0.42  0.349  3.5 1.2
## ENVOVERDEV    721  0.58  0.57  0.54  0.461  3.6 1.3
## OWNERNOREG-    721  0.40  0.40  0.33  0.259  3.2 1.2
## OWNERPUB       721  0.62  0.62  0.60  0.509  3.4 1.2
## OWNERREG       721  0.54  0.55  0.50  0.423  3.6 1.2
## DECISIONDECEN  721  0.43  0.42  0.33  0.282  3.0 1.3
## DECISIONCEN-   721  0.41  0.42  0.34  0.272  3.6 1.2
## INDUSTRYLARGE- 721  0.45  0.47  0.40  0.328  3.9 1.2
## ECONOMYLOCAL    721  0.41  0.41  0.33  0.272  3.3 1.3
## DEVOVERENV-     721  0.32  0.29  0.19  0.148  3.4 1.4
## OWNERPVT        721  0.25  0.23  0.12  0.092  3.2 1.3

```

```
##
```

```
## Non missing response frequency for each item
```

```

##          1      2      3      4      5 miss
## WEALTHLIM    0.07 0.15 0.15 0.30 0.33    0
## MECHANISATION 0.03 0.13 0.12 0.28 0.44    0
## INDUSTRYSMALL 0.06 0.24 0.19 0.18 0.33    0
## ECONOMYGLOBAL 0.21 0.39 0.16 0.17 0.07    0
## ENVOVERDEV    0.08 0.17 0.13 0.32 0.30    0
## OWNERNOREG     0.19 0.23 0.29 0.20 0.09    0
## OWNERPUB       0.07 0.19 0.18 0.31 0.24    0
## OWNERREG       0.03 0.17 0.22 0.28 0.29    0
## DECISIONDECEN  0.14 0.29 0.21 0.16 0.20    0
## DECISIONCEN    0.24 0.38 0.17 0.13 0.07    0
## INDUSTRYLARGE  0.37 0.36 0.11 0.10 0.05    0
## ECONOMYLOCAL    0.08 0.22 0.22 0.23 0.24    0
## DEVOVERENV     0.31 0.27 0.13 0.16 0.14    0
## OWNERPVT       0.12 0.22 0.24 0.21 0.21    0

```

```
## Factor Analysis using method = minres
```

```
## Call: fa(r = ecopolval, nfactors = 4, rotate = "varimax")
```

```
## Standardized loadings (pattern matrix) based upon correlation matrix
```

```

##          item  MR1  MR3  MR4  MR2  h2  u2 com
## OWNERREG      8  0.54              0.37 0.63 1.5
## MECHANISATION  2  0.51              0.33 0.67 1.6
## WEALTHLIM      1  0.48              0.30 0.70 1.6
## INDUSTRYSMALL  3          0.53          0.41 0.59 1.8
## ECONOMYLOCAL   12          0.52          0.29 0.71 1.1

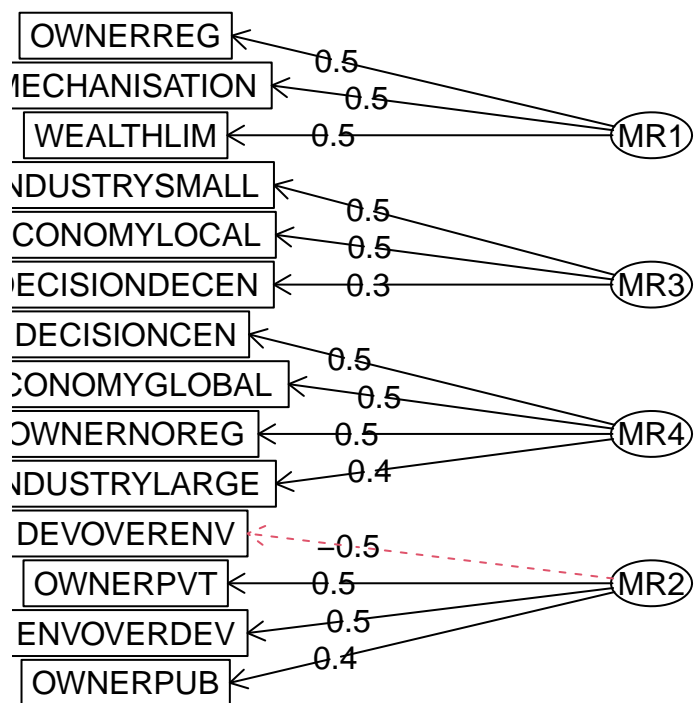
```

```

## DECISIONDECEN      9                0.13 0.87 2.0
## DECISIONCEN       10                0.49    0.28 0.72 1.4
## ECONOMYGLOBAL      4                0.48    0.30 0.70 1.6
## OWNERNOREG         6                0.47    0.40 0.60 2.2
## INDUSTRYLARGE     11                0.43    0.30 0.70 1.9
## DEVOVERENV        13               -0.54 0.29 0.71 1.0
## OWNERPVT          14                0.51 0.27 0.73 1.1
## ENVOVERDEV         5                0.46 0.43 0.57 2.5
## OWNERPUB           7                0.43 0.43 0.57 3.2
##
##                      MR1  MR3  MR4  MR2
## SS loadings          1.21 1.19 1.09 1.04
## Proportion Var       0.09 0.09 0.08 0.07
## Cumulative Var       0.09 0.17 0.25 0.32
## Proportion Explained 0.27 0.26 0.24 0.23
## Cumulative Proportion 0.27 0.53 0.77 1.00
##
## Mean item complexity = 1.8
## Test of the hypothesis that 4 factors are sufficient.
##
## The degrees of freedom for the null model are 91 and the objective function was 2.17 with Chi Square = 147.5
## The degrees of freedom for the model are 41 and the objective function was 0.23 with Chi Square = 163.15
##
## The root mean square of the residuals (RMSR) is 0.03
## The df corrected root mean square of the residuals is 0.05
##
## The harmonic number of observations is 721 with the empirical chi square 147.5 with prob < 6.2e-13
## The total number of observations was 721 with Likelihood Chi Square = 163.15 with prob < 1.7e-13
##
## Tucker Lewis Index of factoring reliability = 0.813
## RMSEA index = 0.064 and the 90 % confidence intervals are 0.054 0.075
## BIC = -106.66
## Fit based upon off diagonal values = 0.97
## Measures of factor score adequacy
##
##                      MR1  MR3  MR4  MR2
## Correlation of (regression) scores with factors 0.74 0.76 0.73 0.77
## Multiple R square of scores with factors        0.54 0.57 0.54 0.59
## Minimum correlation of possible factor scores    0.08 0.14 0.08 0.19

```

## Factor Analysis



## Factor analysis on Scale 2 - Eco-Pol characteristics of the technology - Nuclear Energy

Two Factor Solution - positive versus negative characteristics

### MR1 Negative Characteristics

HEALTHNUCLEAR - Nuclear energy poses a great risk to the health of people living around it.

BEAUTYNUCLEAR - Nuclear energy spoils the natural beauty of the landscape.

DISPLACENUCLEAR- Nuclear energy is leading to displacement of people from their land.

POLLUTENUCLEAR- Nuclear energy increases pollution of air/water/land.

### MR2 Positive Characteristics

DEVNUCLEAR- Nuclear energy pushes forward the country's development.

PRIDENUCLEAR- I would be proud if my community used nuclear energy.

NPRIDENUCLEAR- Nuclear energy is a mark of pride for our nation.

PROSPERNUCLEAR- Nuclear energy brings economic prosperity to the surrounding regions.

JOBSNUCLEAR- Nuclear energy will bring jobs to the local community.

RELYNUCLEAR- I don't like the idea that I have to rely on the government for electricity from nuclear energy.

##

## Reliability analysis

```
## raw_alpha std.alpha G6(smc) average_r S/N ase mean sd median_r
## 0.68 0.69 0.76 0.18 2.2 0.021 3.4 0.61 0.19
```

## Factor Analysis using method = minres

## Call: fa(r = Nuclear, nfactors = 2, rotate = "varimax")

## Standardized loadings (pattern matrix) based upon correlation matrix

```
## item MR1 MR2 h2 u2 com
## HEALTHNUCLEAR 3 0.85 0.72 0.28 1.0
## POLLUTENUCLEAR 2 0.75 0.58 0.42 1.0
## BEAUTYNUCLEAR 5 0.67 0.45 0.55 1.0
## DISPLACENUCLEAR 1 0.53 0.31 0.69 1.2
## DEVNUCLEAR 8 0.70 0.52 0.48 1.1
## PROSPERNUCLEAR 9 0.63 0.42 0.58 1.1
## NPRIDENUCLEAR 7 0.60 0.37 0.63 1.1
## PRIDENUCLEAR 6 0.59 0.39 0.61 1.3
## JOBSNUCLEAR 4 0.50 0.29 0.71 1.4
## RELYNUCLEAR 10 0.16 0.84 1.0
```

##

```
## MR1 MR2
```

```
## SS loadings 2.16 2.05
```

```
## Proportion Var 0.22 0.20
```

```
## Cumulative Var 0.22 0.42
```

```
## Proportion Explained 0.51 0.49
```

```
## Cumulative Proportion 0.51 1.00
```

##

```
## Mean item complexity = 1.1
```

```
## Test of the hypothesis that 2 factors are sufficient.
```

##

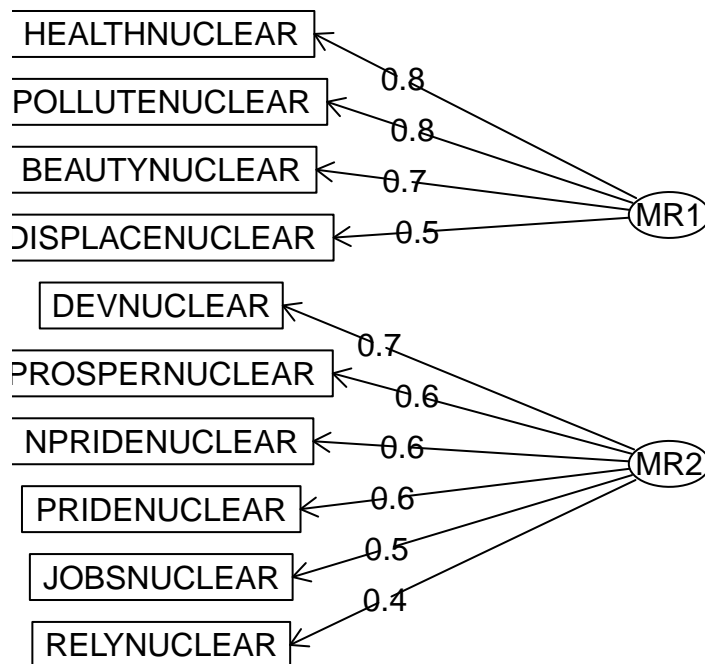
```
## The degrees of freedom for the null model are 45 and the objective function was 2.87 with Chi Squ
```

```

## The degrees of freedom for the model are 26 and the objective function was 0.35
##
## The root mean square of the residuals (RMSR) is 0.05
## The df corrected root mean square of the residuals is 0.07
##
## The harmonic number of observations is 528 with the empirical chi square 137.21 with prob < 4.4e-
## The total number of observations was 528 with Likelihood Chi Square = 183.05 with prob < 1.5e-2
##
## Tucker Lewis Index of factoring reliability = 0.813
## RMSEA index = 0.107 and the 90 % confidence intervals are 0.093 0.122
## BIC = 20.06
## Fit based upon off diagonal values = 0.96
## Measures of factor score adequacy
##
## Correlation of (regression) scores with factors      MR1  MR2
## Multiple R square of scores with factors            0.92 0.88
## Minimum correlation of possible factor scores        0.68 0.55

```

## Factor Analysis



## Solar - FA 2 factor solution

here I'll make the same chart with Coal as well - 2 factor solution and explore the 4 factor solution. Talk to Terre about the Slovic study and how they did it.

```
##
## Reliability analysis
## raw_alpha std.alpha G6(smc) average_r S/N ase mean sd median_r
##      0.78      0.78      0.84      0.13 3.6 0.013 3.5 0.5      0.13

## Factor Analysis using method = minres
## Call: fa(r = secopolall, nfactors = 2, rotate = "varimax")
## Standardized loadings (pattern matrix) based upon correlation matrix
##           item  MR1  MR2   h2  u2 com
## DEVSOLAR      22  0.84      0.724 0.28 1.0
## PROSPERSOLAR  23  0.80      0.646 0.35 1.0
## PRIDESOLAR    20  0.80      0.656 0.34 1.1
## NPRIDESOLAR   21  0.78      0.616 0.38 1.0
## RELYSOLAR     24  0.60      0.361 0.64 1.0
## JOBSSOLAR     18  0.56      0.319 0.68 1.0
## ECONOMYLOCAL   8      0.124 0.88 1.2
## OWNERPVT      11      0.050 0.95 1.1
## POLLUTESOLAR  16      0.69 0.511 0.49 1.1
## HEALTHSOLAR   17      0.58 0.353 0.65 1.1
## BEAUTYSOLAR   19      0.55 0.304 0.70 1.0
## DISPLACESOLAR 15      0.54 0.290 0.71 1.0
## MECHANISATION  2     -0.52 0.300 0.70 1.2
## SYSTEMDEMO    25     -0.50 0.264 0.74 1.1
## ECONOMYGLOBAL  7      0.48 0.234 0.77 1.0
## OWNERPUB      13     -0.47 0.246 0.75 1.2
## ENVOVERDEV     9     -0.44 0.222 0.78 1.2
## OWNERREG      14     -0.44 0.191 0.81 1.0
## WEALTHLIM      1     -0.42 0.173 0.83 1.0
## INDUSTRYLARGE  5      0.41 0.180 0.82 1.1
## INDUSTRYSMALL  6      0.152 0.85 1.1
## DECISIONCEN    4      0.094 0.91 1.1
## DECISIONDECEN  3      0.063 0.94 1.0
## OWNERNOREG     12      0.071 0.93 1.4
## DEVOVERENV     10      0.061 0.94 1.3
##
##           MR1  MR2
## SS loadings      3.62 3.59
## Proportion Var    0.14 0.14
## Cumulative Var    0.14 0.29
## Proportion Explained 0.50 0.50
## Cumulative Proportion 0.50 1.00
##
## Mean item complexity = 1.1
## Test of the hypothesis that 2 factors are sufficient.
##
## The degrees of freedom for the null model are 300 and the objective function was 7.85 with Chi Sq
## The degrees of freedom for the model are 251 and the objective function was 2.23
##
## The root mean square of the residuals (RMSR) is 0.08
## The df corrected root mean square of the residuals is 0.08
```

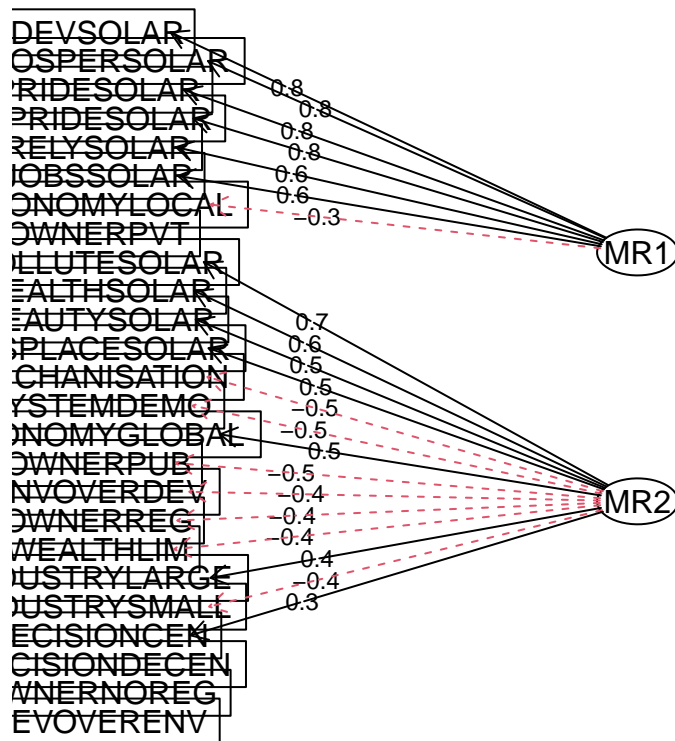


```

##
## The harmonic number of observations is 586 with the empirical chi square 1982.05 with prob < 2.8e-
## The total number of observations was 586 with Likelihood Chi Square = 1279.58 with prob < 2.3e-
##
## Tucker Lewis Index of factoring reliability = 0.708
## RMSEA index = 0.084 and the 90 % confidence intervals are 0.079 0.088
## BIC = -320.12
## Fit based upon off diagonal values = 0.87
## Measures of factor score adequacy
##
## Correlation of (regression) scores with factors      MR1  MR2
## Multiple R square of scores with factors            0.95 0.91
## Minimum correlation of possible factor scores        0.81 0.67

```

## Factor Analysis



## Coal - FA 2 factor solution

```
##
## Reliability analysis
## raw_alpha std.alpha G6(smc) average_r S/N ase mean sd median_r
## 0.8 0.8 0.84 0.14 4.1 0.013 3.3 0.47 0.14

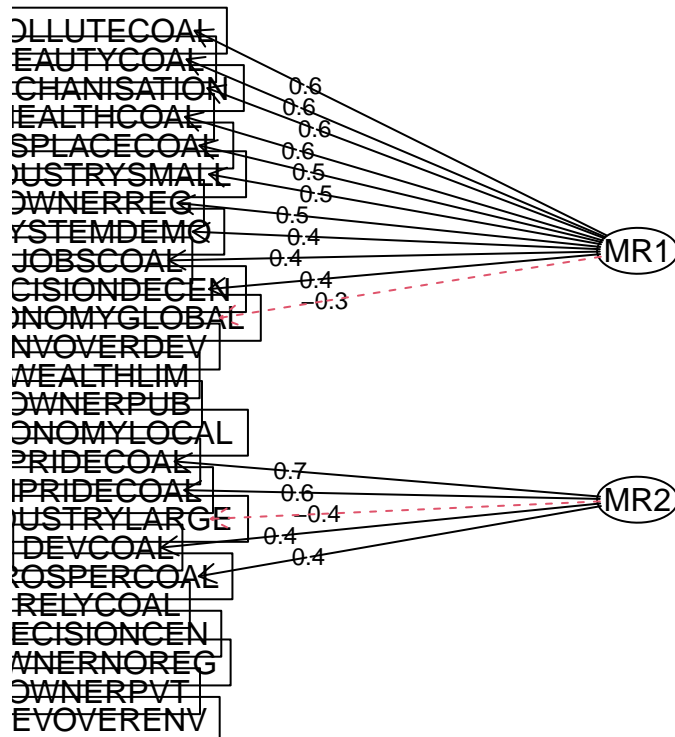
## Factor Analysis using method = minres
## Call: fa(r = cecopolall, nfactors = 2, rotate = "varimax")
## Standardized loadings (pattern matrix) based upon correlation matrix
## item MR1 MR2 h2 u2 com
## POLLUTECOAL 16 0.65 0.428 0.57 1.0
## BEAUTYCOAL 19 0.63 0.409 0.59 1.1
## MECHANISATION 2 0.58 0.361 0.64 1.1
## HEALTHCOAL 17 0.58 0.370 0.63 1.2
## DISPLACECOAL 15 0.54 0.295 0.71 1.0
## INDUSTRYSMALL 6 0.52 0.272 0.73 1.0
## OWNERREG 14 0.47 0.233 0.77 1.1
## SYSTEMDEMO 25 0.41 0.240 0.76 1.7
## JOBSCOAL 18 0.41 0.217 0.78 1.5
## DECISIONDECEN 3 0.128 0.87 1.0
## ECONOMYGLOBAL 7 0.183 0.82 2.0
## ENVOVERDEV 9 0.095 0.91 1.1
## WEALTHLIM 1 0.166 0.83 2.0
## OWNERPUB 13 0.101 0.90 1.5
## ECONOMYLOCAL 8 0.017 0.98 2.0
## PRIDECOAL 20 0.65 0.438 0.56 1.1
## NPRIDECOAL 21 0.59 0.374 0.63 1.2
## INDUSTRYLARGE 5 -0.44 0.246 0.75 1.5
## DEVCOAL 22 0.43 0.289 0.71 1.8
## PROSPERCOAL 23 0.229 0.77 1.9
## RELYCOAL 24 0.100 0.90 1.5
## DECISIONCEN 4 0.101 0.90 1.6
## OWNERNOREG 12 0.100 0.90 1.7
## OWNERPVT 11 0.060 0.94 1.7
## DEVOVERENV 10 0.022 0.98 1.2
##
## MR1 MR2
## SS loadings 3.48 2.00
## Proportion Var 0.14 0.08
## Cumulative Var 0.14 0.22
## Proportion Explained 0.64 0.36
## Cumulative Proportion 0.64 1.00
##
## Mean item complexity = 1.4
## Test of the hypothesis that 2 factors are sufficient.
##
## The degrees of freedom for the null model are 300 and the objective function was 5.26 with Chi Sq
## The degrees of freedom for the model are 251 and the objective function was 1.78
##
## The root mean square of the residuals (RMSR) is 0.07
## The df corrected root mean square of the residuals is 0.07
##
## The harmonic number of observations is 496 with the empirical chi square 1261.39 with prob < 3.5
## The total number of observations was 496 with Likelihood Chi Square = 862.72 with prob < 4.2e-6
```

```

##
## Tucker Lewis Index of factoring reliability = 0.675
## RMSEA index = 0.07 and the 90 % confidence intervals are 0.065 0.075
## BIC = -695.13
## Fit based upon off diagonal values = 0.87
## Measures of factor score adequacy
##
## Correlation of (regression) scores with factors    MR1  MR2
## Multiple R square of scores with factors          0.90 0.85
## Minimum correlation of possible factor scores      0.63 0.43

```

## Factor Analysis



# Appendix1

## Kahan et al (2007) scale

### Individualism - Communitarism

- **K\_IINTRFER** The government interferes far too much in our everyday lives.
- **K\_IPRIVACY** The government should stop telling people how to live their lives.
- **K\_IPROTECT** It's not the government's business to try to protect people from themselves.
- **K\_SHARM** Sometimes the government needs to make laws that keep people from hurting themselves.
- **K\_SLIMCHOI** The government should put limits on the choices individuals can make so they don't get in the way of what's good for society.
- **K\_SPROTECT** The government should do more to advance society's goals, even if that means limiting the freedom and choices of individuals.

### Hierarchy -Egalitarianism

- **K\_HEQUAL** We have gone too far in pushing equal rights in this country.
- **K\_HREVDIS1** Nowadays it seems like there is just as much discrimination against upper castes as there is against Dalits.
- **K\_EDISCRIM** Discrimination against minorities is still a very serious problem in our society.
- **K\_ERADEQ1** We need to dramatically reduce inequalities between the rich and the poor.
- **K\_EWEALTH** Our society would be better off if the distribution of wealth was more equal.
- **K\_ERADEQ2** We need to dramatically reduce inequalities between men and women.

## Appendix2

### New Eco-pol values scale

- **DISPLACENUCLEAR** Nuclear energy is leading to displacement of people from their land
- **BEAUTYNUCLEAR** Nuclear energy spoils the natural beauty of the landscape
- **POLLUTENUCLEAR** Nuclear energy increases pollution of air/water/land
- **HEALTHNUCLEAR** Nuclear energy poses a great risk to the health of people living around it
- **JOBSNUCLEAR** Nuclear energy will bring jobs to the local community
- **PRIDENUCLEAR** I would be proud if my community used nuclear energy
- **NPRIDENUCLEAR** Nuclear energy is a mark of pride for our nation
- **DEVNUCLEAR** Nuclear energy pushes forward the country's development
- **PROSPERNUCLEAR** Nuclear energy brings economic prosperity to the surrounding regions
- **RELYNUCLEAR** I don't like the idea that I have to rely on the government for electricity from nuclear energy
- **DECISIONDECEN** Local politicians shouldn't have to ask permission from the central government to implement policies
- **DECISIONCEN** Laws and policies would be implemented more smoothly if more power lay with the central government.
- **INDUSTRYLARGE** Large scale industries are required for the development of the country that will benefit everyone
- **ECONOMYLOCAL** India would be better off if foreign companies didn't come to here
- **DEVOVERENV** Economic growth and creating jobs should be prioritized over environmental protection
- **INDUSTRYSMALL** Large corporations are destroying the local industries in India and benefiting only a handful of people.
- **WEALTHLIM** A limit should be put to how much wealth a person can amass
- **ECONOMYGLOBAL** Foreign companies have led to a range of benefits for the Indian people and society
- **OWNERPVT** All businesses and industries should be owned privately
- **OWNERPUB** The government should own most large businesses and industries
- **ENVOVERDEV** Polluting industries that spoil the environment should be shut down even if it costs people their jobs
- **OWNERREG** Regardless of ownership, the government should pass strong regulations and implement them
- **MECHANISATION** Rapid mechanization of work is taking away jobs from workers in this country
- **OWNERNOREG** There is too much red-tape and the government should not interfere with businesses and industries