Appendix

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12/25/2019

Contents

Search criteria

Search terms

XXXX

Searched databases

XXXX To Catarina: name and URL of database searched

Summary total results

XXXX To Catarina: put here results per database, cross-matching, anything else

Exclusion criteria

Exclusion title and abstract XXXX To Catarina: what criteria for first round exclusions?

Exclusion reading XXXX To Catarina: criteria second round exclusions

Exclusion analysis For the articles that passed the first two filters, we looked into the tables and the reported coefficients. We kept articles in this step based on two criteria:

1. Matched treatment variable:

- N: Number Legislators Lower House
- logN: Log Number Legislators Lower House
- K: Number Legislators Upper House

2. Matched outcome variable:

- ExpPC: Expenditure Per Capita
- logExpPC: Log Expenditure Per Capita
- PCTGDP: Percent GDP Public Expenditure

PRISM

- Number of articles matching the search criteria: XXXX
- Number of articles excluded after title and abstract: XXXX
- Number of articles excluded after reading: XXXX
- Number of articles excluded before analysis: 3
- Number of articles excluded during the analysis: 0

We have 26 articles in the meta-analysis.

Meta-analysis dataset

The meta-analytic data is comprised of two datasets. The first dataset has the main coefficients that were reported in the paper. XXXX (Copiar da parte de métodos).

Adding articles

Descriptive statistics

Study Year

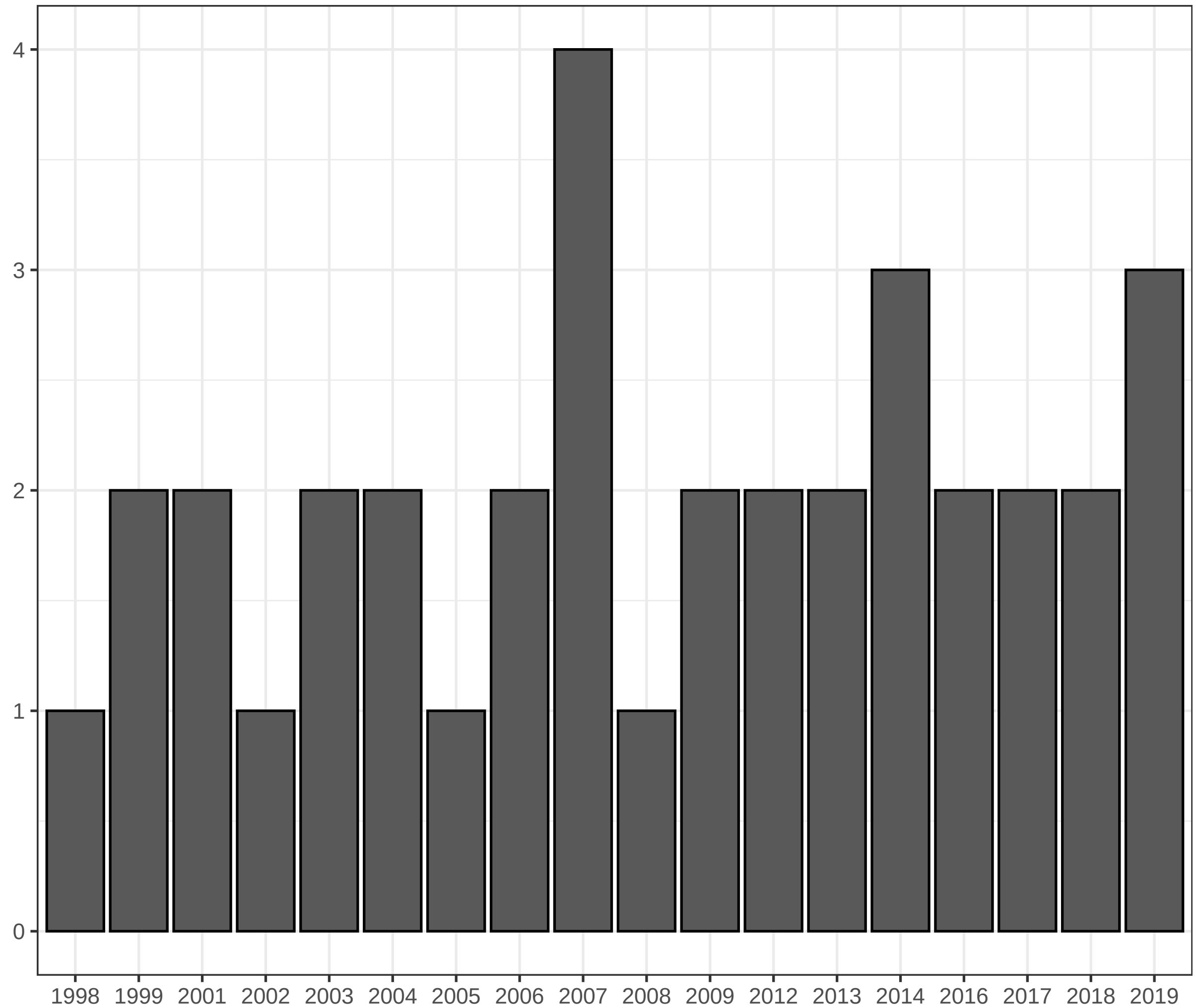


Figure 1: Study Year Frequencies

Published?

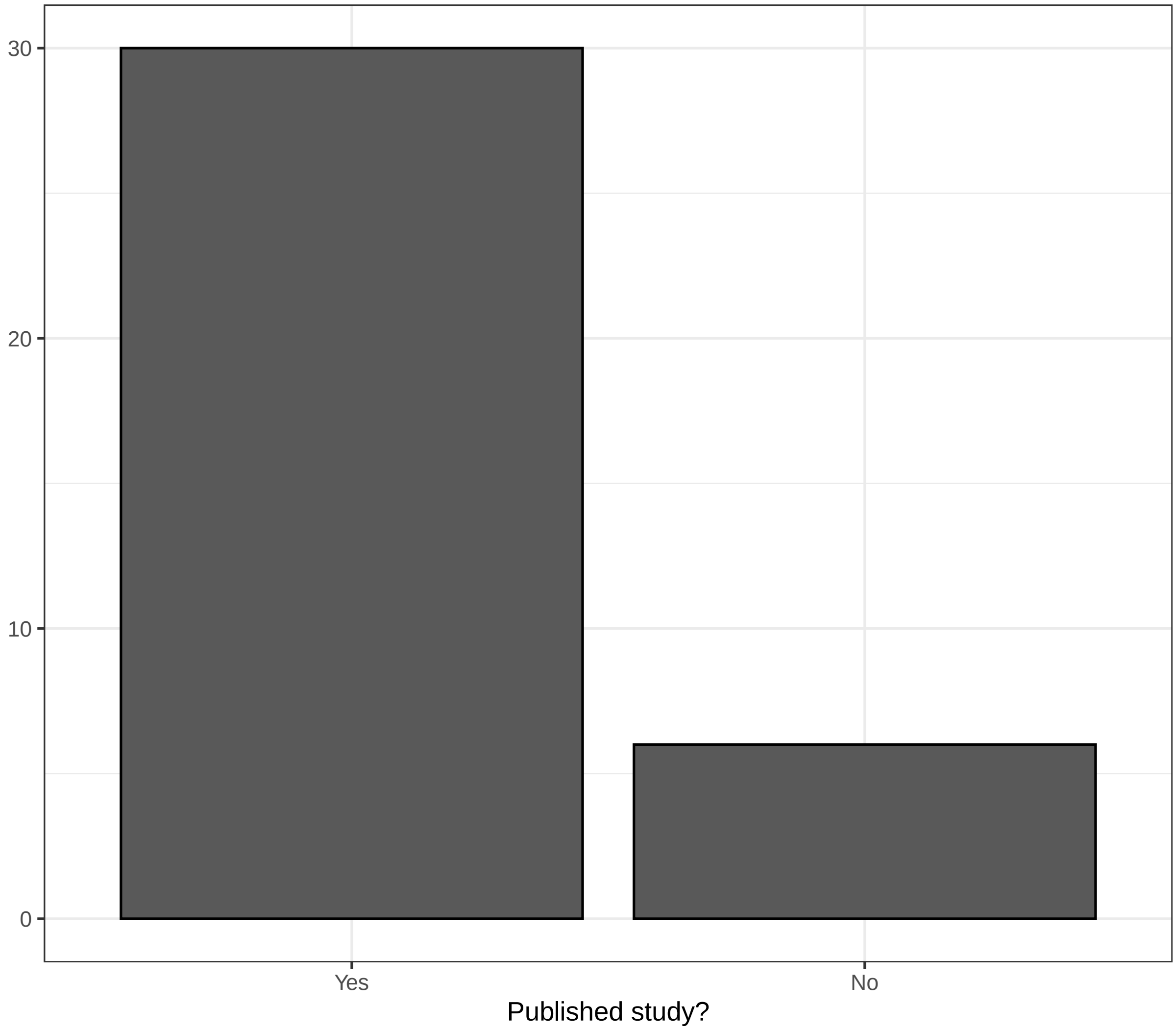


Figure 2: Was the study published?

Dependent variables

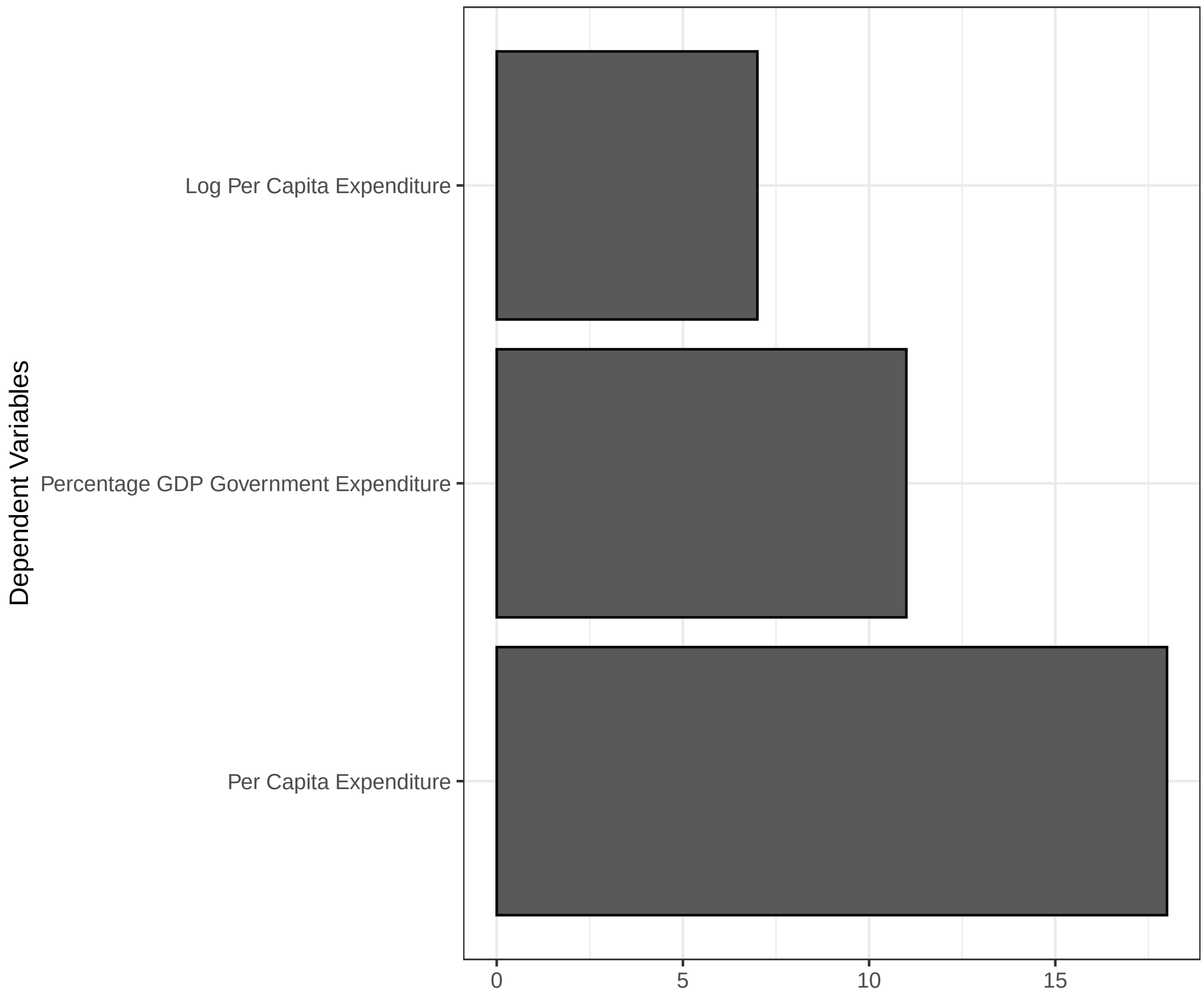


Figure 3: Dependent variables across the law of 1/n studies

Independent variables

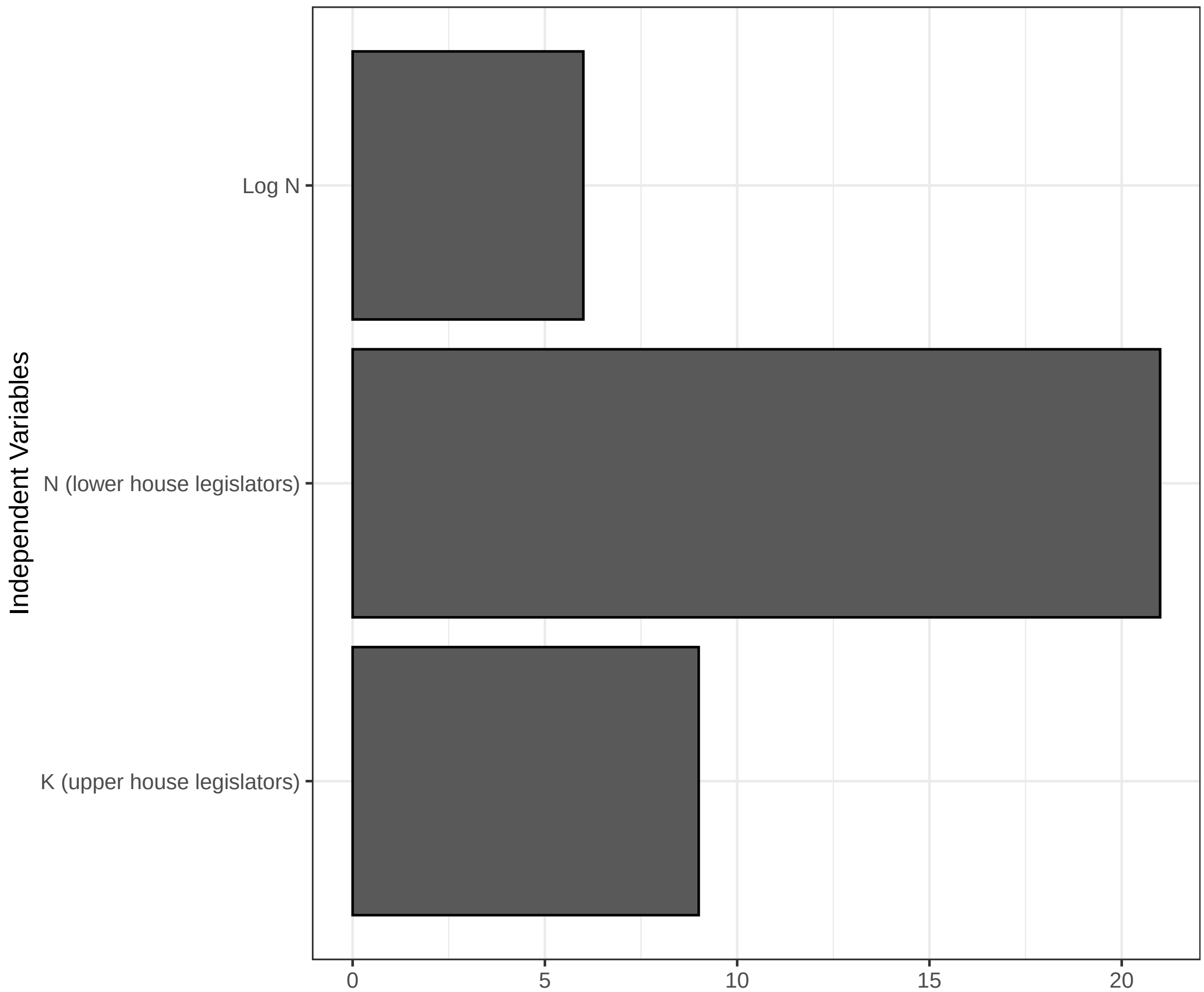


Figure 4: Independent variables across the law of 1/n studies

Histogram Coefficients

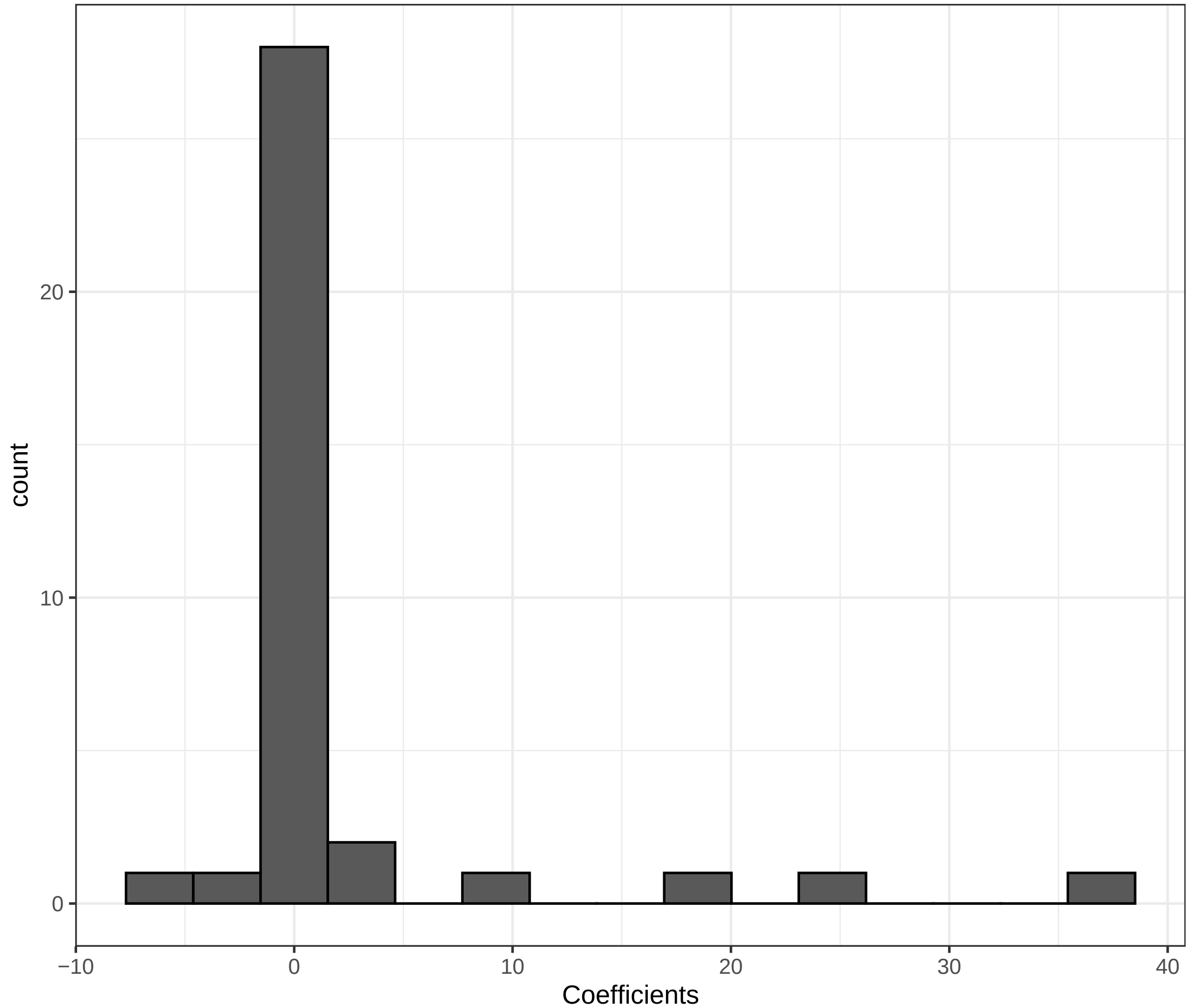


Figure 5: Histogram Coefficients

Histogram Standard Errors

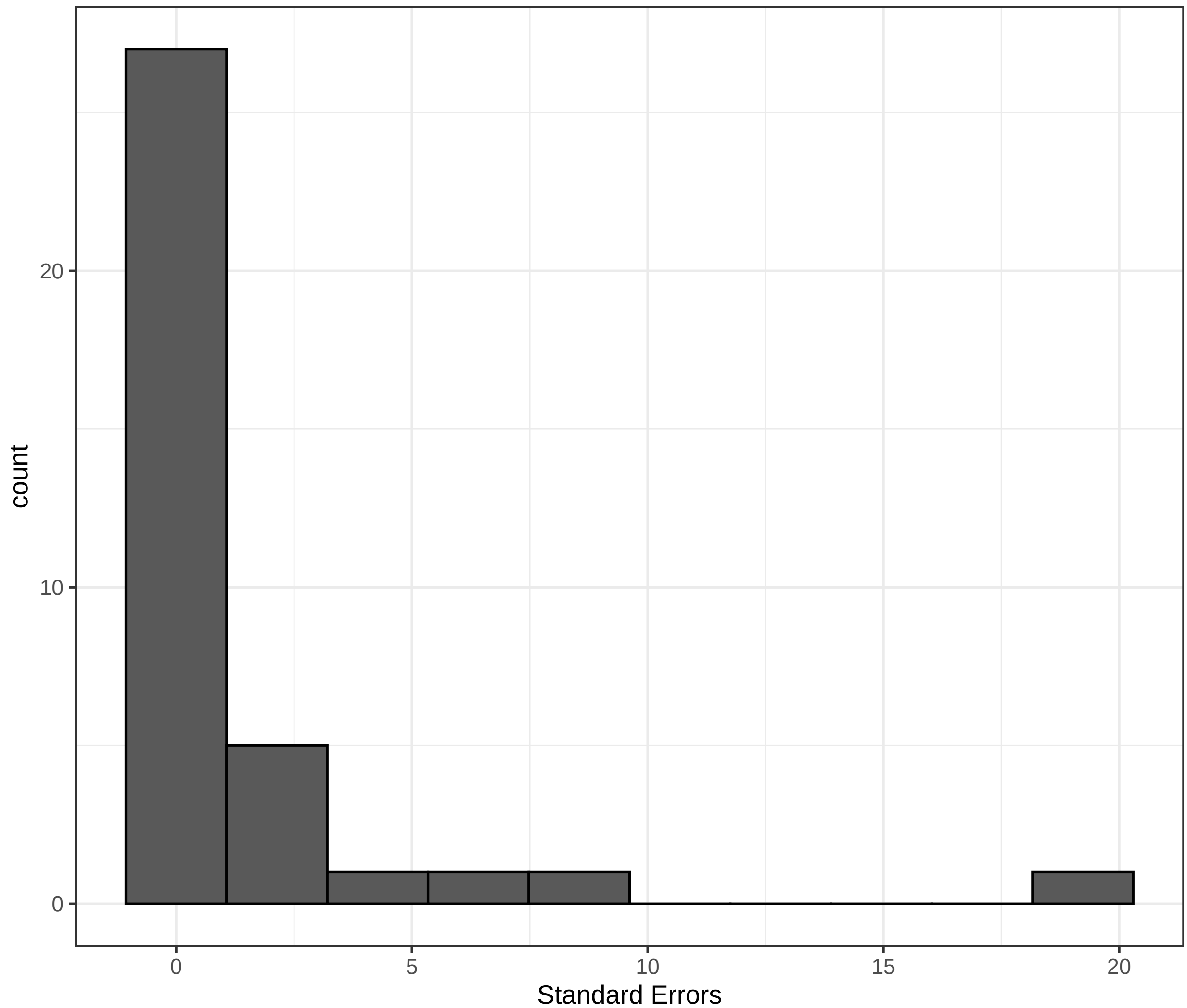


Figure 6: Histogram Standard Errors

Sign Coefficients

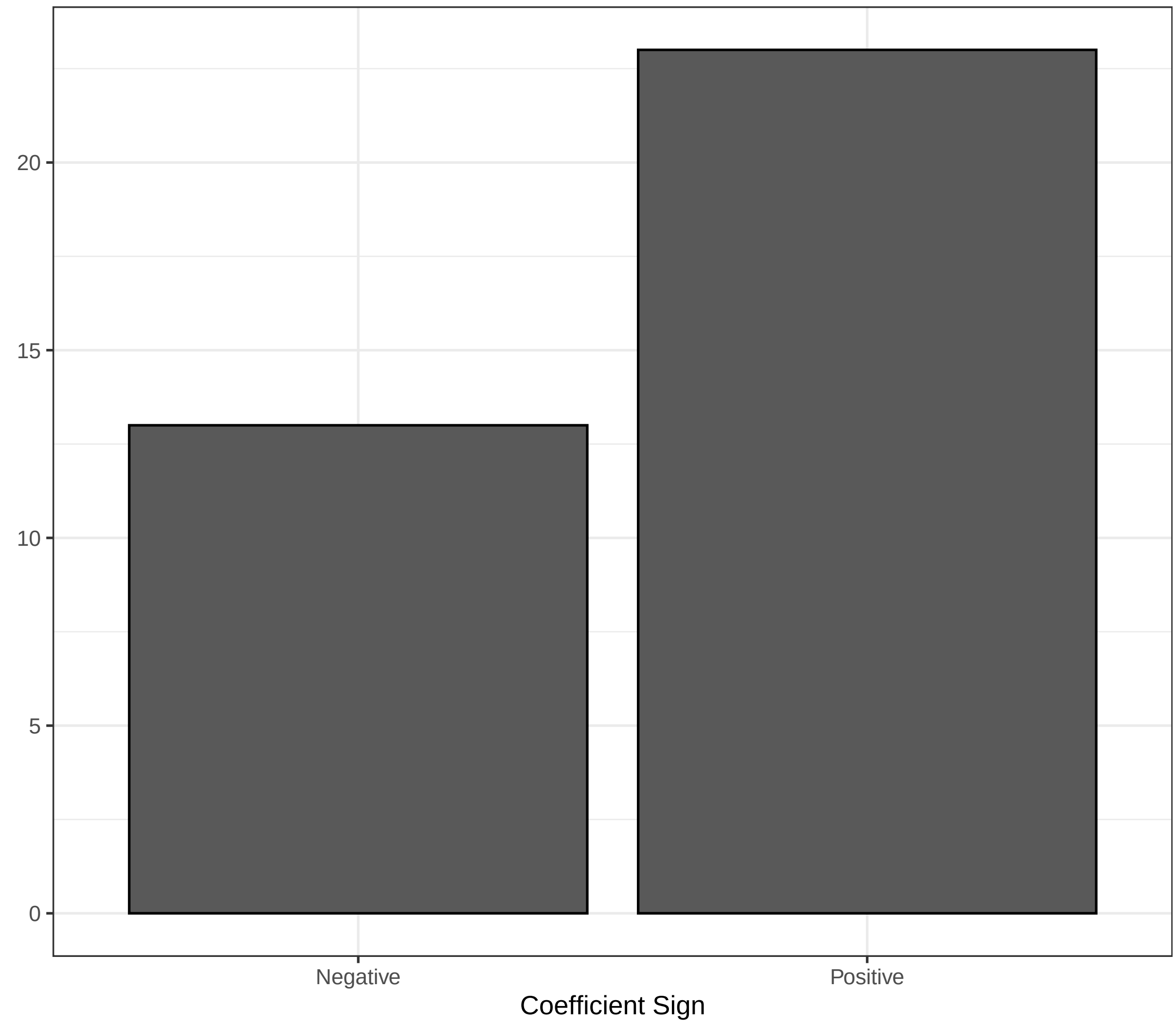


Figure 7: Coefficient Sign?

A general test of the theory would be to study whether the coefficients are positive or negative. Note that the law of 1/n would pose that we should have a positive influence of legislature size on expenditure. To test this theory, we run a Binomial One-Proportion Z-test. For the number of legislators in the lower house (N), the results follow below.

```
##
##  Exact binomial test
##
## data:  table(aux$scoef)[1] and sum(table(aux$scoef))
## number of successes = 11, number of trials = 21, p-value = 1
## alternative hypothesis: true probability of success is not equal to 0.5
## 95 percent confidence interval:
##  0.2978068 0.7428694
## sample estimates:
## probability of success
```

```
##              0.5238095
```

Therefore, the most elementary test we could run, a sign direction test, tells us that the law of 1/n does not hold for our sample. For the number of legislators in the upper house (K), the results follow below.

```
##
##  Exact binomial test
##
## data:  table(aux$scoef)[1] and sum(table(aux$scoef))
## number of successes = 1, number of trials = 9, p-value = 0.03906
## alternative hypothesis: true probability of success is not equal to 0.5
## 95 percent confidence interval:
##  0.002809137 0.482496515
## sample estimates:
## probability of success
##              0.1111111
```

Here, the law of 1/n holds. However, the effect goes in a direction different from the predicted in the law of k/n paper.

Electoral system

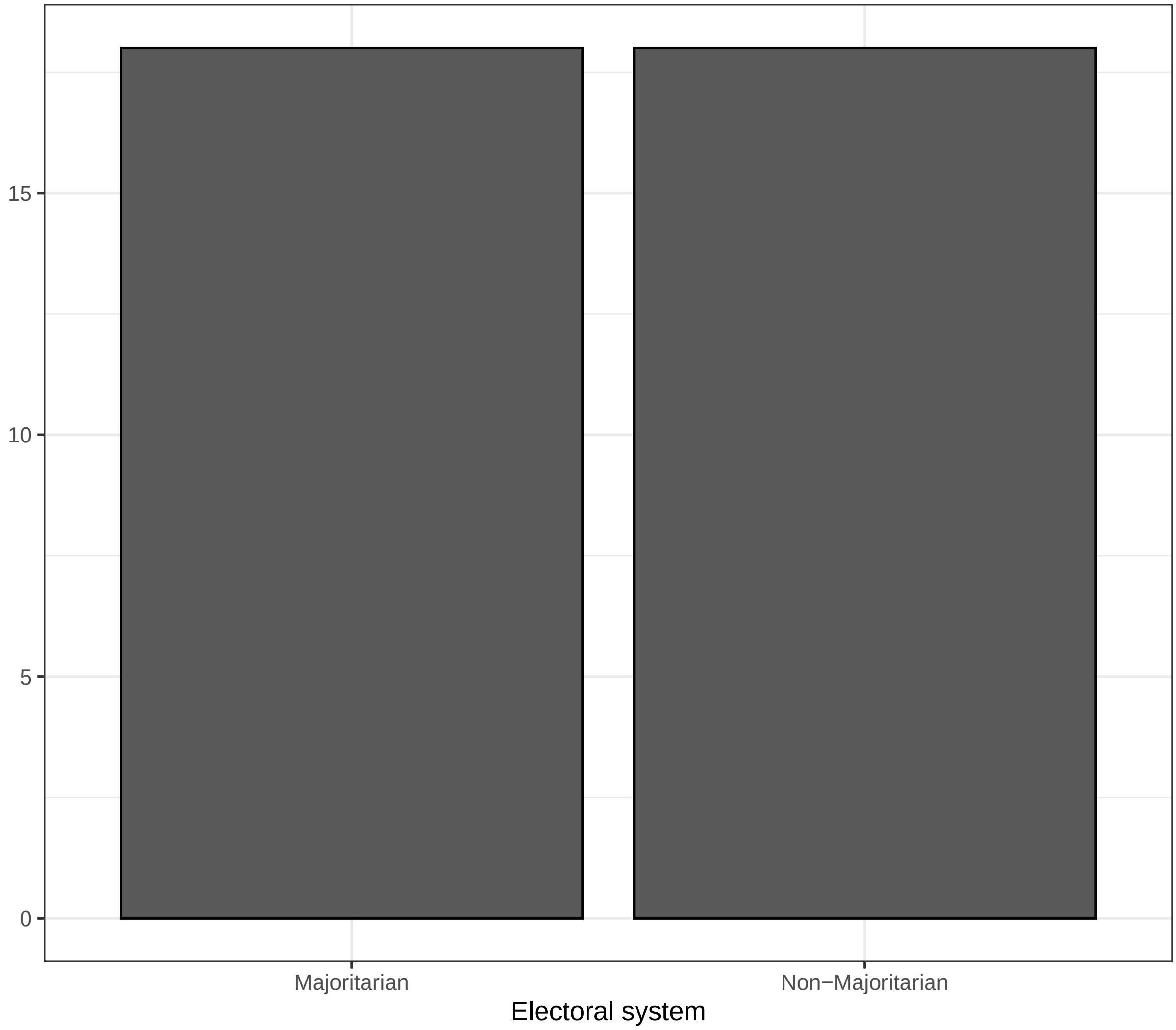


Figure 8: Electoral system

Electoral system x Sign Coefficient

```
##
##            Majoritarian Non-Majoritarian
##   Negative            5                8
##   Positive           13               10
##
##  Pearson's Chi-squared test with simulated p-value (based on 2000
##  replicates)
##
## data:  table(dat$scoef, dat$elecsys2)
## X-squared = 1.0836, df = NA, p-value = 0.4883
```

Independent Variable x Sign Coefficient

```
##
##             K  N logN
##   Negative  1 11    1
##   Positive  8 10    5
##
##  Pearson's Chi-squared test with simulated p-value (based on 2000
##  replicates)
##
## data:  table(dat$scoef, dat$indepvar2)
## X-squared = 5.8309, df = NA, p-value = 0.06397
```

Dependent variables x Independent variables

```
##
##            ExpPC PCTGDP logExpPC
##   Negative     6      4        3
##   Positive    12      7        4
##
##  Pearson's Chi-squared test with simulated p-value (based on 2000
##  replicates)
##
## data:  table(dat$scoef, dat$depvar2)
## X-squared = 0.19858, df = NA, p-value = 1
```

Descriptive Stats of Moderators

depvar2	n	pct	mean_coef	median_coef
ExpPC	18	0.50	5.2420778	0.193500
PCTGDP	11	0.31	-0.2426139	0.003627
logExpPC	7	0.19	0.0378143	0.077000

Descriptive Stats of Moderators by Year

Moderator	Year	N	Pct	Mean	Median
PCTGDP	1998	1	100 %	0.011	0.011
PCTGDP	1999	1	50 %	2.066	2.066
logExpPC	1999	1	50 %	0.302	0.302
PCTGDP	2001	2	100 %	0.008	0.008
logExpPC	2002	1	100 %	0.113	0.113
PCTGDP	2003	2	100 %	-2.344	-2.344
PCTGDP	2004	2	100 %	0.015	0.015
ExpPC	2005	1	100 %	-0.960	-0.960
ExpPC	2006	2	100 %	0.075	0.075
ExpPC	2007	4	100 %	7.048	2.071
logExpPC	2008	1	100 %	0.136	0.136
ExpPC	2009	2	100 %	0.312	0.312
PCTGDP	2012	1	50 %	-0.040	-0.040
logExpPC	2012	1	50 %	-0.159	-0.159
ExpPC	2013	1	50 %	0.974	0.974
PCTGDP	2013	1	50 %	-0.061	-0.061
ExpPC	2014	2	67 %	0.085	0.085
PCTGDP	2014	1	33 %	-0.004	-0.004
ExpPC	2016	2	100 %	19.228	19.228
logExpPC	2017	2	100 %	0.024	0.024
ExpPC	2018	2	100 %	9.444	9.444
ExpPC	2019	2	67 %	3.930	3.930
logExpPC	2019	1	33 %	-0.174	-0.174

Meta-analysis

We combined the three independent variables (N, logN, and K) with the levels of the three dependent variables (ExpPC, logExpPC, PCTGDP). This formed a 3x3 possibility for our analysis.

ExpPC x N

```
##                                  SMD             95%-CI %W(random)
## Crowley (2019)               -0.3510 [-1.8112;  1.1092]        5.3
## Lee and Park (2018)          -0.8510 [-3.5851;  1.8831]        2.1
## Lee (2016)                    0.0164 [-2.5570;  2.5898]        2.4
## Kessler (2014)                0.1740 [ 0.0074;  0.3406]       13.1
## Bjedov et al. (2014)         -0.0030 [-0.0226;  0.0166]       13.4
## Baskaran (2013)               0.9740 [-0.1212;  2.0692]        7.3
## Erler (2007)                  3.9300 [ 1.6172;  6.2428]        2.8
## Chen and Malhotra (2007)     -2.0400 [-4.6468;  0.5668]        2.3
## Fiorino and Ricciuti (2007)  0.2130 [ 0.1777;  0.2483]       13.4
## Primo (2006)                 -0.8200 [-1.1924; -0.4476]       12.2
## Matsusaka (2005)             -0.9600 [-1.3128; -0.6072]       12.3
## Schaltegger and Feld (2009)  0.0010 [-0.0010;  0.0030]       13.4
##
## Number of studies combined: k = 12
##
##                           SMD            95%-CI     t p-value
## Random effects model -0.0699 [-0.6712; 0.5314] -0.26  0.8028
## Prediction interval          [-1.5540; 1.4142]
##
## Quantifying heterogeneity:
##  tau^2 = 0.3690 [0.1794; 4.7570]; tau = 0.6075 [0.4236; 2.1810];
##  I^2 = 94.7% [92.3%; 96.3%]; H = 4.34 [3.61; 5.21]
##
## Test of heterogeneity:
##       Q d.f.  p-value
##  206.92   11 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

Highlights:

1. The results are highly heterogeneous: \$Iˆ2 = \$ 94.68.
2. The Random effects modem SMD estimated is \$g = \$ -0.07 ($SE = 0.273$).
3. The prediction interval ranges from -1.55 to 1.41. Therefore, it emcompasses zero.

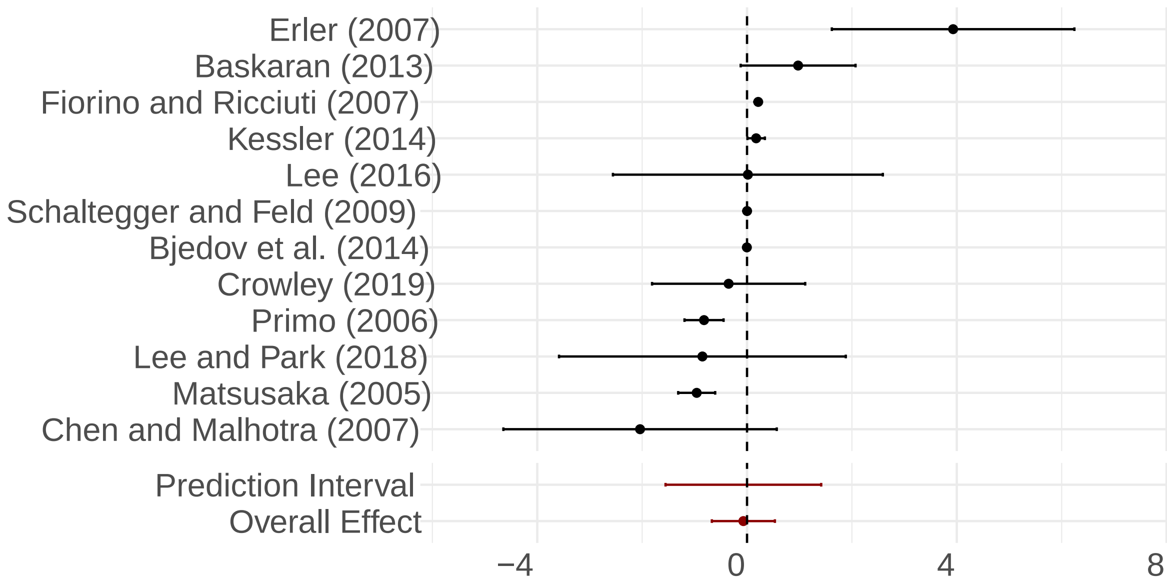


Figure 9: Effect of lower houses size (N) on Per Capita Expenditure (ExpPC)

Electoral system subgroup analysis The law of 1/n was created for majoritarian systems. In the theoretical section below, we explain why the argument have potential issues when applied to non-majoritarian electoral systems. We estimated a subgroup analysis using a binary electoral system.

Therefore, we can see that the hypothesis that majoritarian systems produce systematic positive effects was disproved. The majoritarian systems in the sample had a random effects model estimate of -0.25, while the random effects model in the non-majoritarian subgroup fitted a value of 0.08. Both are non-significant, but they reassure us that the absense of effect is not caused by pooling multiple types of electoral systems.

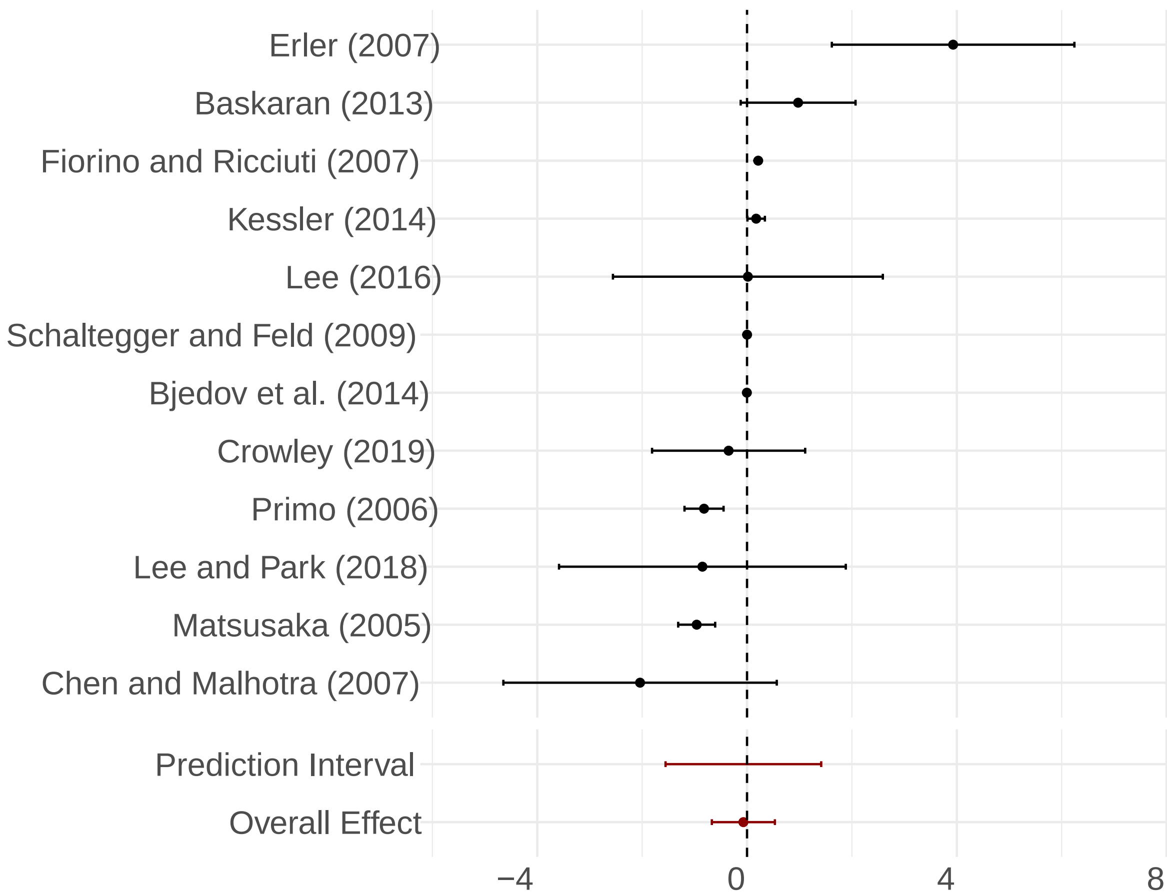


Figure 10: Subgroup Analysis of (N) x (ExpPC), controlling by electoral system

PCTGDP x N

This model fits the random effects for the percentage of GDP as public expenditure as the main outcome, and the size of lower house as the main treatment variable.

```r
# Pooling effects analysis -- PCTGDP x N
aux <- dat %>%
  filter(indepvar2 == 'N',
         depvar2 == 'PCTGDP')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                                 SMD             95%-CI %W(random)
## Bjedov et al. (2014)        -0.0040 [-0.0432;  0.0352]       15.1
## Maldonado (2013)            -0.0609 [-0.0838; -0.0380]       19.5
## Mukherjee (2003)             0.0030 [ 0.0010;  0.0050]       23.0
## Bradbury and Crain (2001)  0.0036 [ 0.0008;  0.0065]       23.0
## Ricciuti (2004)              0.0140 [-0.0095;  0.0375]       19.4
##
## Number of studies combined: k = 5
##
##                          SMD             95%-CI     t p-value
## Random effects model -0.0083 [-0.0450; 0.0285] -0.62  0.5667
## Prediction interval          [-0.1054; 0.0889]
##
## Quantifying heterogeneity:
##  tau^2 = 0.0008 [0.0002; 0.0072]; tau = 0.0275 [0.0129; 0.0849];
##  I^2 = 87.1% [72.2%; 94.0%]; H = 2.78 [1.90; 4.08]
##
## Test of heterogeneity:
##      Q d.f.  p-value
##  30.97    4 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

Highlights:

1. The results are highly heterogeneous: $I^2 = $ 87.08.
2. The Random effects modem SMD estimated is $g = $ -0.01 (SE = 0.013).
3. The prediction interval ranges from -0.11 to 0.09. Therefore, it emcompasses zero.

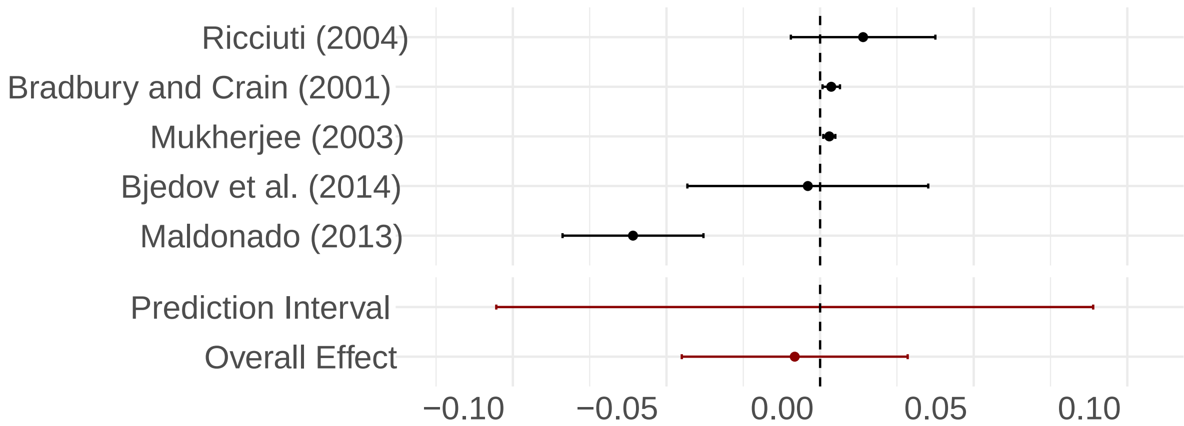


Figure 11: Effect of lower houses size (N) on percentage of public expenditure GDP (PCTGDP)

logExpPC x N

This model estimates the Log of Per Capita Expenditure as the dependent variable, and the number of lower house legislators as the treatment variable.

```
# Pooling effects analysis -- logExpPC x N
aux <- dat %>%
  filter(indepvar2 == 'N',
         depvar2 == 'logExpPC')

mod <- metagen(
  coef, SE, data=aux,
  studlab=paste(authoryear),
  comb.fixed = FALSE,
  comb.random = TRUE,
  method.tau = "REML",
  hakn = TRUE,
  prediction = TRUE,
  sm="SMD"
  )

mod
```

```
##                               SMD             95%-CI %W(random)
## Lewis (2019)              -0.1740 [-0.2450; -0.1030]       24.3
## Höhmann (2017)            -0.0300 [-0.0496; -0.0104]       26.6
## Drew and Dollery (2017)    0.0770 [ 0.0221;  0.1319]       25.3
## Pettersson-Lidbom (2012) -0.1590 [-0.2394; -0.0786]       23.7
##
## Number of studies combined: k = 4
##
##                           SMD            95%-CI     t p-value
## Random effects model -0.0686 [-0.2560; 0.1188] -1.17  0.3282
## Prediction interval          [-0.6179; 0.4807]
##
## Quantifying heterogeneity:
```

```
##  tau^2 = 0.0128 [0.0034; 0.1933]; tau = 0.1133 [0.0584; 0.4396];
##  I^2 = 92.5% [84.1%; 96.5%]; H = 3.66 [2.51; 5.34]
##
## Test of heterogeneity:
##      Q d.f.  p-value
##  40.11    3 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

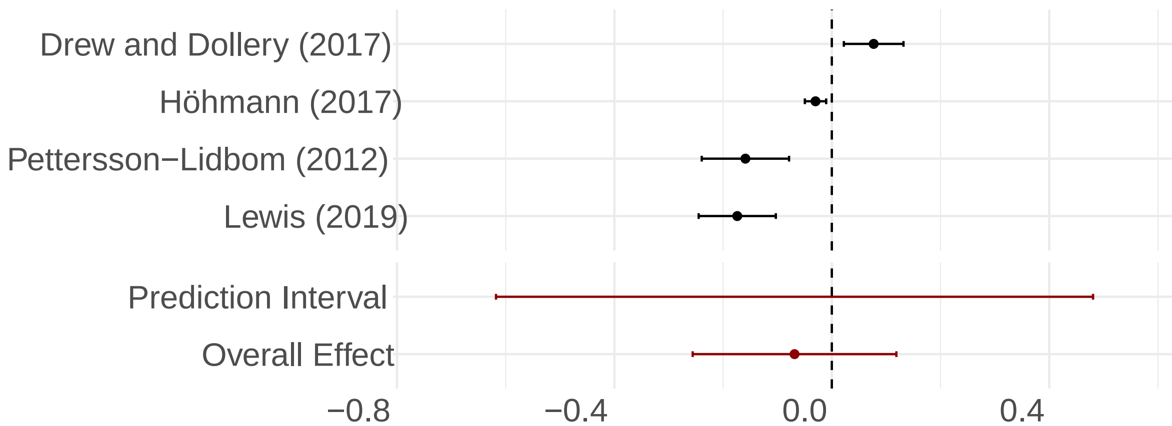


Figure 12: Effect of lower houses size (N) on log of per capita expenditure (logExpPC)

Highlights:

1. The results are highly heterogeneous: $I^2 = $ 92.52.
2. The Random effects modem SMD estimated is $g = $ -0.07 ($SE = 0.059$).
3. The prediction interval ranges from -0.62 to 0.48. Therefore, it emcompasses zero.

ExpPC x logN

There were no studies that had per capita expenditure in the dependent variable and log of lower house size in the treatment variable.

PCTGDP x logN

This meta-regression investigates the percentage of GDP as public expenditure as the dependent variable and the log lower house size (logN) as the treatment variable.

```r
# Pooling effects analysis -- PCTGDP x logN
aux <- dat %>%
  filter(indepvar2 == 'logN',
         depvar2 == 'PCTGDP')

mod <- metagen(
  coef, SE, data=aux,
  studlab=paste(authoryear),
  comb.fixed = FALSE,
  comb.random = TRUE,
  method.tau = "REML",
  hakn = TRUE,
  prediction=TRUE,
  sm="SMD"
  )

mod
```

```
##                          SMD            95%-CI %W(random)
## Baqir (1999)          2.0660 [ 1.4887; 2.6433]       40.8
## Lledo (2003)         -4.6900 [-9.9427; 0.5627]       17.7
## Stein et al. (1998)   0.0109 [-0.0171; 0.0389]       41.5
##
## Number of studies combined: k = 3
##
##                          SMD              95%-CI    t p-value
## Random effects model 0.0203 [ -7.1961;  7.2367] 0.01  0.9914
## Prediction interval         [-36.2058; 36.2465]
##
## Quantifying heterogeneity:
##  tau^2 = 5.3156 [0.5756; >100.0000]; tau = 2.3056 [0.7587; >10.0000];
##  I^2 = 96.1% [91.8%; 98.2%]; H = 5.08 [3.48; 7.42]
##
## Test of heterogeneity:
##      Q d.f.  p-value
##  51.65    2 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

Highlights:

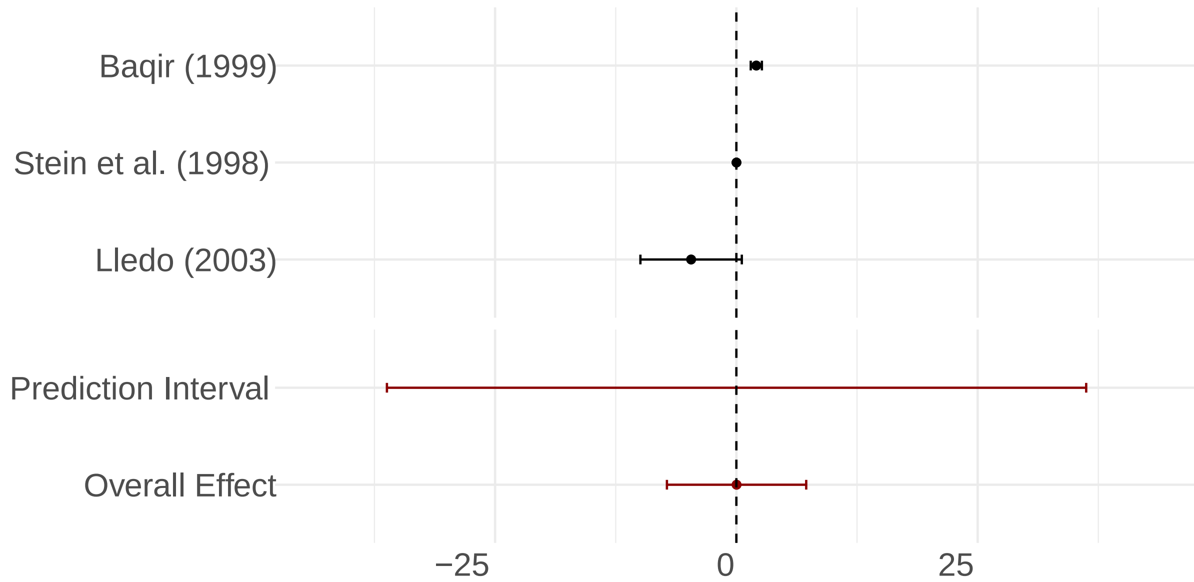


Figure 13: Effect of log lower houses size (logN) on the GDP share of public expenditure (PCTGDP)

1. The results are highly heterogeneous: \$Iˆ2 = \$ 96.13.
2. The Random effects modem SMD estimated is \$g = \$ 0.02 ($SE = 1.677$).
3. The prediction interval ranges from -36.21 to 36.25. Therefore, it emcompasses zero.

logExpPC x logN

In this specification, we study the log of per capita expenditure (logExpPC) as a function of the log of lower house size (logN).

```r
# Pooling effects analysis -- logExpPC x logN
aux <- dat %>%
  filter(indepvar2 == 'logN',
         depvar2 == 'logExpPC')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                      SMD           95%-CI %W(random)
## MacDonald (2008) 0.1360 [0.0447; 0.2273]       31.9
## Baqir (2002)     0.1127 [0.0396; 0.1858]       34.2
## Baqir (1999)     0.3020 [0.2269; 0.3771]       33.9
##
## Number of studies combined: k = 3
##
##                          SMD            95%-CI    t p-value
## Random effects model 0.1844 [-0.0738; 0.4425] 3.07  0.0916
## Prediction interval         [-1.2580; 1.6267]
##
## Quantifying heterogeneity:
##  tau^2 = 0.0093 [0.0014; 0.4193]; tau = 0.0964 [0.0372; 0.6476];
##  I^2 = 85.9% [59.0%; 95.2%]; H = 2.66 [1.56; 4.54]
##
## Test of heterogeneity:
##      Q d.f. p-value
##  14.18    2  0.0008
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

Highlights:

1. The results are highly heterogeneous: \$I^2 = \$ 85.9.
2. The Random effects modem SMD estimated is \$g = \$ 0.18 ($SE = 0.06$). **This model is significant at the 10% confidence level.**
3. The prediction interval ranges from -1.26 to 1.63. Therefore, it emcompasses zero.

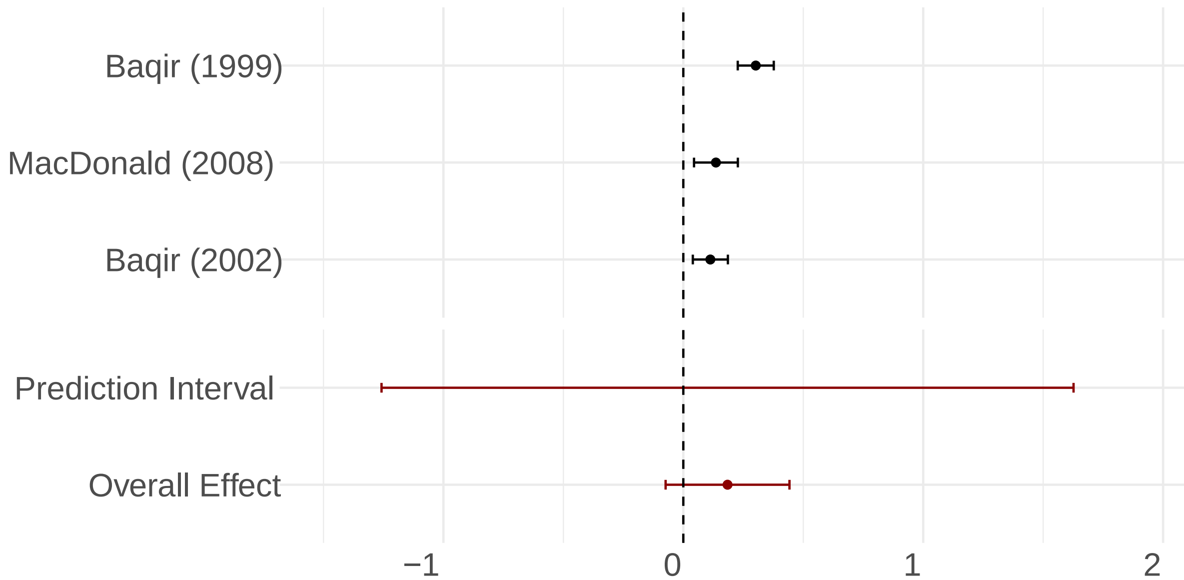


Figure 14: Effect of log lower houses size (logN) on the log of per capita government expenditure (logExpPC)

ExpPC x K

Now we are investigating the upper house size (K). In this model, we investigate the effect of upper house size on expenditure per capita (ExpPC).

```
# Pooling effects analysis -- ExpPC x K
aux <- dat %>%
  filter(indepvar2 == 'K',
         depvar2 == 'ExpPC')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                                     SMD             95%-CI %W(random)
## Crowley (2019)                   8.2100 [ 0.2702; 16.1498]       20.0
## Lee and Park (2018)             19.7400 [ 3.2645; 36.2155]       13.8
## Lee (2016)                      38.4400 [ 0.7499; 76.1301]        5.1
## Bradbury and Stephenson (2009)  0.6240 [ 0.2295;  1.0185]       23.1
## Chen and Malhotra (2007)        26.0900 [11.4883; 40.6917]       15.1
## Primo (2006)                     0.9700 [-0.4804;  2.4204]       23.0
##
## Number of studies combined: k = 6
##
##                           SMD               95%-CI     t p-value
```

```
## Random effects model 10.6134 [ -2.6210; 23.8479] 2.06  0.0943
## Prediction interval          [-21.1303; 42.3571]
##
## Quantifying heterogeneity:
##  tau^2 = 104.2124 [20.3551; >1042.1236]; tau = 10.2084 [4.5117; >32.2819];
##  I^2 = 79.4% [55.1%; 90.6%]; H = 2.20 [1.49; 3.26]
##
## Test of heterogeneity:
##      Q d.f. p-value
##  24.31    5  0.0002
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

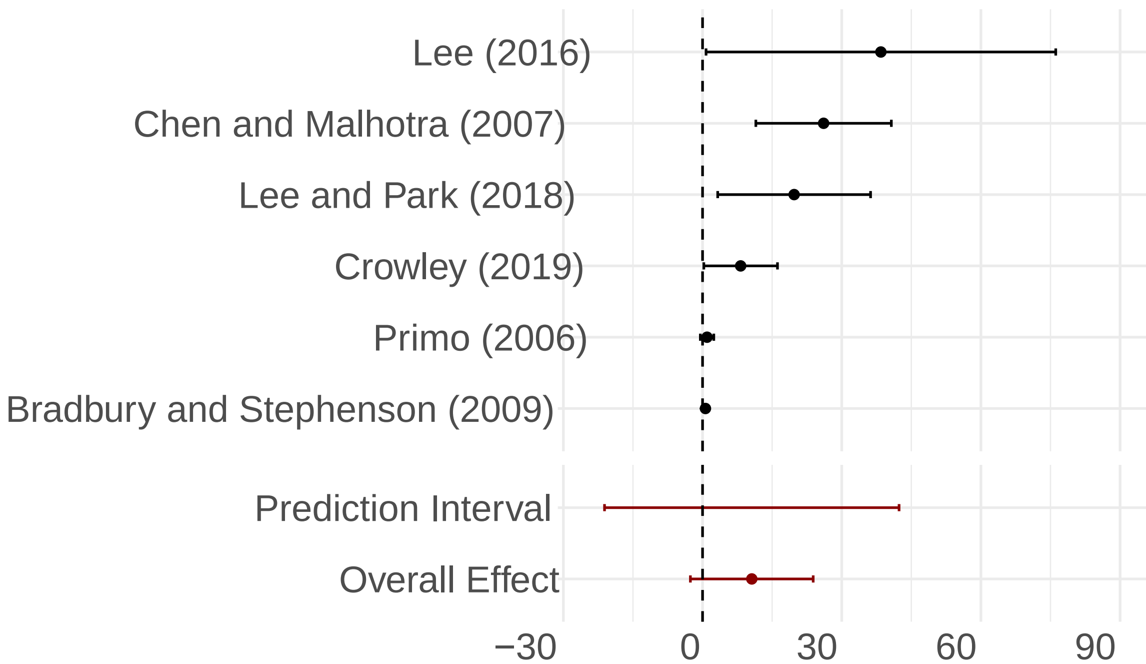


Figure 15: Effect of upper house size (K) on the per capita government expenditure (ExpPC)

Highlights:

1. The results are highly heterogeneous: $I^2 = $ 79.43.
2. The Random effects modem SMD estimated is $g = $ 10.61 ($SE = 5.148$).
3. The prediction interval ranges from -21.13 to 42.36. Therefore, it emcompasses zero.

PCTGDP x K

This model looks into the effect of upper house size (K) on the public expenditure share of the GDP (PCTGDP).

```
# Pooling effects analysis -- PCTGDP x K
aux <- dat %>%
  filter(indepvar2 == 'K',
         depvar2 == 'PCTGDP')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                                SMD             95%-CI %W(random)
## Maldonado (2012)           -0.0400 [-0.0659; -0.0141]       31.3
## Bradbury and Crain (2001)   0.0126 [ 0.0010;  0.0243]       36.4
## Ricciuti (2004)             0.0160 [-0.0075;  0.0395]       32.3
##
## Number of studies combined: k = 3
##
##                           SMD            95%-CI     t p-value
## Random effects model -0.0027 [-0.0793; 0.0738] -0.15  0.8915
## Prediction interval          [-0.4284; 0.4229]
##
## Quantifying heterogeneity:
##  tau^2 = 0.0008 [0.0001; 0.0388]; tau = 0.0284 [0.0101; 0.1970];
##  I^2 = 85.8% [58.6%; 95.1%]; H = 2.65 [1.55; 4.53]
##
## Test of heterogeneity:
##      Q d.f. p-value
##  14.07    2  0.0009
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

Highlights:

1. The results are highly heterogeneous: $I^2 = $ 85.79.
2. The Random effects modem SMD estimated is $g = $ 0 ($SE = 0.018$).
3. The prediction interval ranges from -0.43 to 0.42. Therefore, it emcompasses zero.

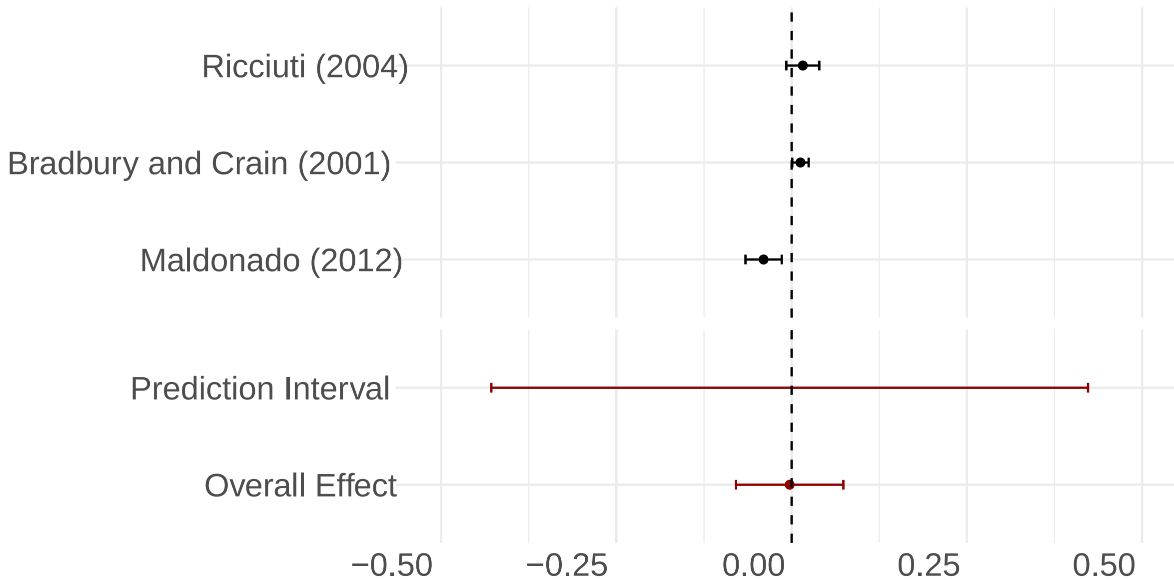
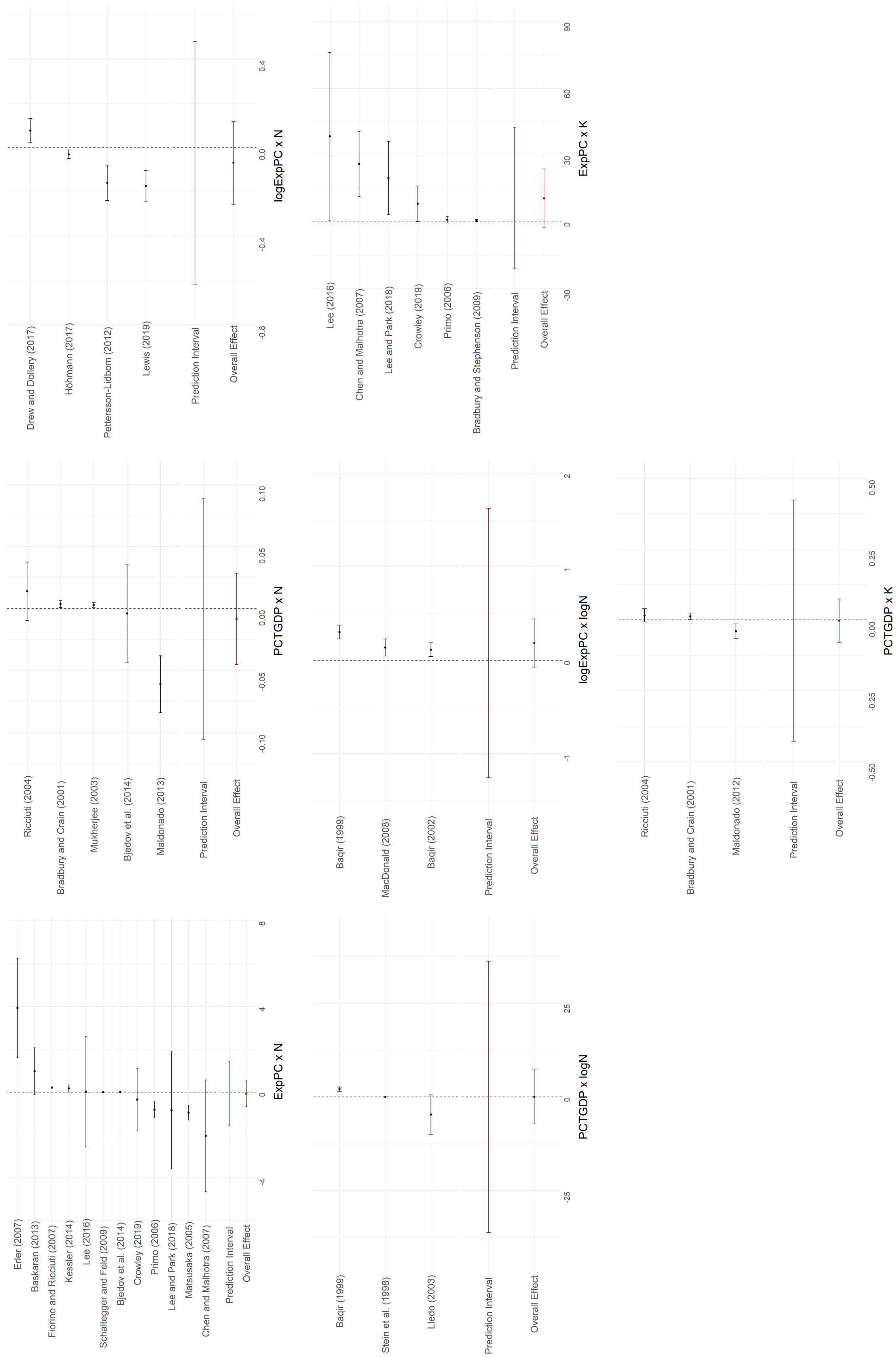


Figure 16: Effect of upper house size (K) on the public expenditure share of the GDP (PCTGDP)

logExpPC x K

No studies related the log of per capita expenditure with the size of upper house (K).


logExpPC x N
Drew and Dollery (2017)
Höhmann (2017)
Pettersson-Lidbom (2012)
Lewis (2019)
Prediction Interval
Overall Effect
-0.8
-0.4
0.0
0.4
ExpPC x K
Lee (2016)
Chen and Malhotra (2007)
Lee and Park (2018)
Crowley (2019)
Primo (2006)
Bradbury and Stephenson (2009)
Prediction Interval
Overall Effect
-30
0
30
60
90
PCTGDP x N
Ricciuti (2004)
Bradbury and Crain (2001)
Mukherjee (2003)
Bjedov et al. (2014)
Maldonado (2013)
Prediction Interval
Overall Effect
-0.10
-0.05
0.00
0.05
0.10
logExpPC x logN
Baqir (1999)
MacDonald (2008)
Baqir (2002)
Prediction Interval
Overall Effect
-1
0
1
2
PCTGDP x K
Ricciuti (2004)
Bradbury and Crain (2001)
Maldonado (2012)
Prediction Interval
Overall Effect
-0.50
-0.25
0.00
0.25
0.50
ExpPC x N
Erler (2007)
Baskaran (2013)
Fiorino and Ricciuti (2007)
Kessler (2014)
Lee (2016)
Schaltegger and Feld (2009)
Bjedov et al. (2014)
Crowley (2019)
Primo (2006)
Lee and Park (2018)
Matsusaka (2005)
Chen and Malhotra (2007)
Prediction Interval
Overall Effect
-4
0
4
8
PCTGDP x logN
Baqir (1999)
Stein et al. (1998)
Lledo (2003)
Prediction Interval
Overall Effect
-25
0
25

Meta-Analysis (all coefficients)

ExpPC x N

```
## Warning in rma.uni(yi = TE[sel], sei = seTE[sel], method = method.tau, control
## = control): Ratio of largest to smallest sampling variance extremely large. May
## not be able to obtain stable results.

##                                  SMD             95%-CI %W(random)
## Crowley (2019)               -0.3510 [-1.8112;  1.1092]        2.0
## Crowley (2019)                5.9750 [ 0.7889; 11.1611]        0.3
## Crowley (2019)                7.6580 [-0.0290; 15.3450]        0.2
## Lee and Park (2018)          -0.8510 [-3.5851;  1.8831]        0.9
## Lee and Park (2018)          -1.6890 [-3.0551; -0.3229]        2.1
## Lee and Park (2018)           7.6320 [ 3.1064; 12.1576]        0.4
## Lee (2016)                    0.0164 [-2.5570;  2.5898]        1.0
## Kessler (2014)                0.1740 [ 0.0074;  0.3406]        3.6
## Kessler (2014)                0.2230 [ 0.1211;  0.3249]        3.6
## Kessler (2014)                0.2150 [ 0.0954;  0.3346]        3.6
## Kessler (2014)                0.1580 [ 0.0522;  0.2638]        3.6
## Bjedov et al. (2014)         -0.0030 [-0.0226;  0.0166]        3.6
## Bjedov et al. (2014)         -0.0060 [-0.0256;  0.0136]        3.6
## Baskaran (2013)               0.9740 [-0.1212;  2.0692]        2.5
## Erler (2007)                  3.9300 [ 1.6172;  6.2428]        1.2
## Chen and Malhotra (2007)     -2.0400 [-4.6468;  0.5668]        1.0
## Chen and Malhotra (2007)     -1.4000 [-2.6544; -0.1456]        2.3
## Fiorino and Ricciuti (2007)  0.2130 [ 0.1777;  0.2483]        3.6
## Fiorino and Ricciuti (2007)  0.2290 [ 0.1565;  0.3015]        3.6
## Fiorino and Ricciuti (2007)  0.4550 [ 0.3805;  0.5295]        3.6
## Fiorino and Ricciuti (2007)  0.4110 [ 0.3150;  0.5070]        3.6
## Fiorino and Ricciuti (2007)  0.2260 [ 0.1221;  0.3299]        3.6
## Fiorino and Ricciuti (2007)  0.2130 [-0.4083;  0.8343]        3.1
## Fiorino and Ricciuti (2007)  0.1850 [-0.4128;  0.7828]        3.2
## Fiorino and Ricciuti (2007)  0.2350 [-0.4235;  0.8935]        3.1
## Fiorino and Ricciuti (2007)  0.3740 [ 0.2486;  0.4994]        3.6
## Fiorino and Ricciuti (2007)  0.8110 [ 0.4562;  1.1658]        3.4
## Fiorino and Ricciuti (2007)  0.7950 [ 0.4500;  1.1400]        3.5
## Fiorino and Ricciuti (2007)  0.8490 [ 0.3825;  1.3155]        3.3
## Primo (2006)                 -0.8200 [-1.1924; -0.4476]        3.4
## Primo (2006)                 -1.7000 [-2.3076; -1.0924]        3.2
## Primo (2006)                 -2.3700 [-3.0952; -1.6448]        3.0
## Primo (2006)                 -2.0300 [-2.7552; -1.3048]        3.0
## Matsusaka (2005)             -0.9600 [-1.3128; -0.6072]        3.4
## Schaltegger and Feld (2009)  0.0010 [-0.0010;  0.0030]        3.6
## Schaltegger and Feld (2009) -0.0010 [-0.0030;  0.0010]        3.6
##
## Number of studies combined: k = 36
##
##                          SMD            95%-CI     t p-value
## Random effects model -0.0169 [-0.4166; 0.3829] -0.09  0.9322
## Prediction interval          [-1.7588; 1.7250]
##
## Quantifying heterogeneity:
##  tau^2 = 0.6959 [0.7202; 4.3553]; tau = 0.8342 [0.8486; 2.0869];
##  I^2 = 95.3% [94.2%; 96.1%]; H = 4.60 [4.16; 5.08]
```

```
##
## Test of heterogeneity:
##       Q d.f.  p-value
##  739.53   35 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

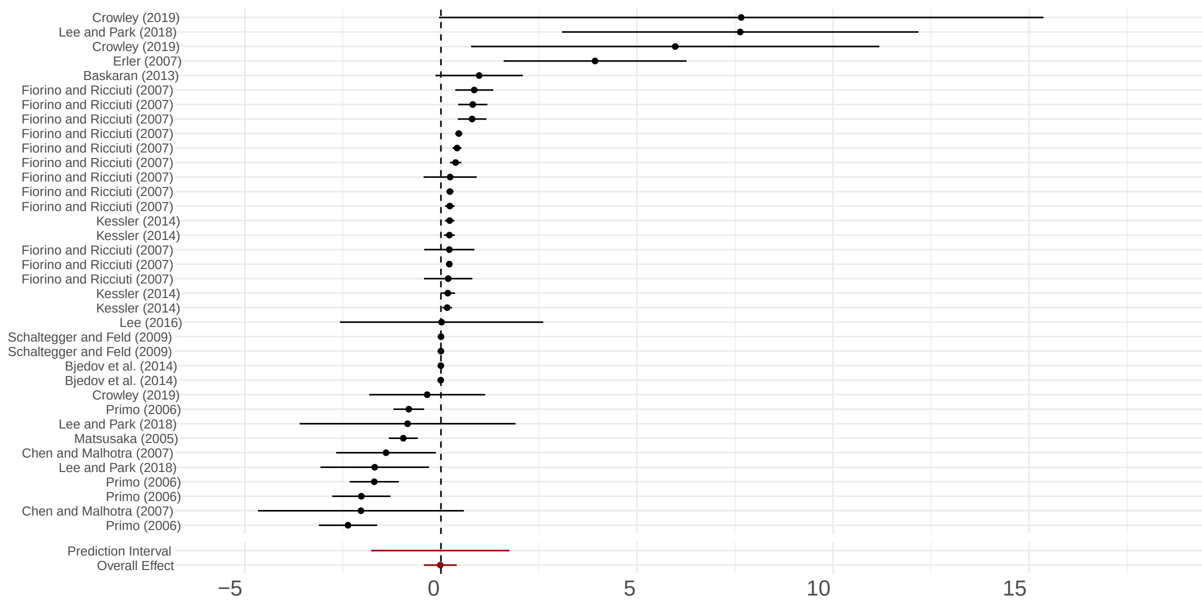


Figure 17: Effect of lower houses size (N) on Per Capita Expenditure (ExpPC)

Highlights:

1. The results are highly heterogeneous: \$Iˆ2 = \$ 95.27.
2. The Random effects modem SMD estimated is \$g = \$ -0.02 (SE = 0.197).
3. The prediction interval ranges from -1.76 to 1.73. Therefore, it emcompasses zero.

Electoral system subgroup analysis The law of 1/n was created for majoritarian systems. In the theoretical section below, we explain why the argument have potential issues when applied to non-majoritarian electoral systems. We estimated a subgroup analysis using a binary electoral system.

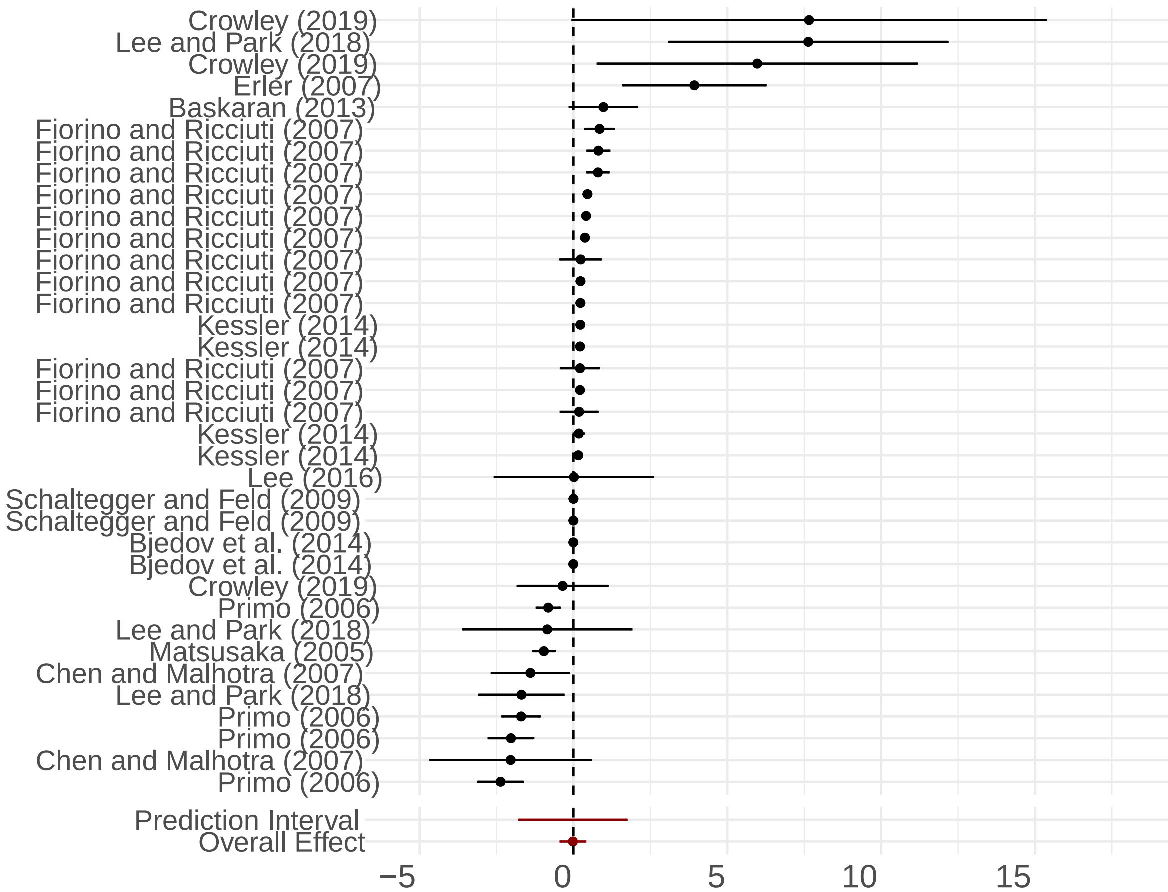


Figure 18: Subgroup Analysis of (N) x (ExpPC), controlling by electoral system

Therefore, we can see that the hypothesis that majoritarian systems produce systematic positive effects was disproved. The majoritarian systems in the sample had a random effects model estimate of -0.25, while the random effects model in the non-majoritarian subgroup fitted a value of 0.08. Both are non-significant, but they reassure us that the absense of effect is not caused by pooling multiple types of electoral systems.

PCTGDP x N

This model fits the random effects for the percentage of GDP as public expenditure as the main outcome, and the size of lower house as the main treatment variable.

```
# Pooling effects analysis -- PCTGDP x N
aux <- fulldat %>%
  filter(indepvar2 == 'N',
         depvar2 == 'PCTGDP')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                                  SMD             95%-CI %W(random)
## Bjedov et al. (2014)      -0.0040 [-0.0432;  0.0352]        2.1
## Bjedov et al. (2014)      -0.0080 [-0.0472;  0.0312]        2.1
## Maldonado (2013)          -0.0609 [-0.0838; -0.0380]        3.6
## Mukherjee (2003)           0.0030 [ 0.0010;  0.0050]        5.6
## Mukherjee (2003)           0.0090 [ 0.0051;  0.0129]        5.5
## Mukherjee (2003)           0.0110 [ 0.0051;  0.0169]        5.4
## Mukherjee (2003)           0.0050 [-0.0009;  0.0109]        5.4
## Mukherjee (2003)           0.0400 [ 0.0380;  0.0420]        5.6
## Mukherjee (2003)           0.0300 [ 0.0280;  0.0320]        5.6
## Mukherjee (2003)           0.0100 [ 0.0061;  0.0139]        5.5
## Mukherjee (2003)           0.0200 [ 0.0122;  0.0278]        5.3
## Bradbury and Crain (2001)  0.0036 [ 0.0008;  0.0065]        5.6
## Bradbury and Crain (2001)  0.0005 [-0.0016;  0.0027]        5.6
## Bradbury and Crain (2001)  0.0169 [ 0.0131;  0.0208]        5.6
## Bradbury and Crain (2001)  0.0123 [ 0.0087;  0.0160]        5.6
## Ricciuti (2004)            0.0140 [-0.0095;  0.0375]        3.5
## Ricciuti (2004)           -0.0110 [-0.0286;  0.0066]        4.2
## Ricciuti (2004)            0.0070 [-0.0067;  0.0207]        4.7
## Ricciuti (2004)            0.0050 [-0.0126;  0.0226]        4.2
## Ricciuti (2004)            0.0050 [-0.0126;  0.0226]        4.2
## Ricciuti (2004)            0.0120 [-0.0017;  0.0257]        4.7
##
## Number of studies combined: k = 21
##
##                           SMD            95%-CI    t p-value
## Random effects model 0.0078 [-0.0003; 0.0160] 2.01  0.0579
## Prediction interval         [-0.0259; 0.0416]
##
## Quantifying heterogeneity:
##  tau^2 = 0.0002 [0.0002; 0.0007]; tau = 0.0156 [0.0136; 0.0261];
##  I^2 = 98.5% [98.2%; 98.7%]; H = 8.11 [7.40; 8.88]
##
## Test of heterogeneity:
##        Q d.f.  p-value
```

```
##  1314.54   20 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

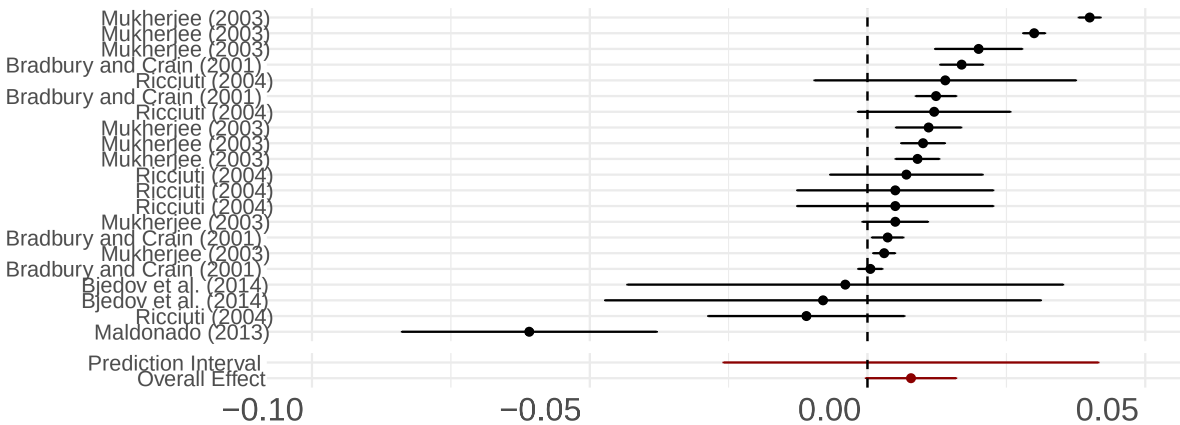


Figure 19: Effect of lower houses size (N) on percentage of public expenditure GDP (PCTGDP)

Highlights:

1. The results are highly heterogeneous: $I^2 = $ 98.48.
2. The Random effects modem SMD estimated is $g = $ 0.01 ($SE = 0.004$).
3. The prediction interval ranges from -0.03 to 0.04. Therefore, it emcompasses zero.

logExpPC x N

This model estimates the Log of Per Capita Expenditure as the dependent variable, and the number of lower house legislators as the treatment variable.

```r
# Pooling effects analysis -- logExpPC x N
aux <- fulldat %>%
  filter(indepvar2 == 'N',
         depvar2 == 'logExpPC')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                               SMD             95%-CI %W(random)
## Lewis (2019)              -0.1740 [-0.2450; -0.1030]        6.6
## Höhmann (2017)            -0.0300 [-0.0496; -0.0104]        7.1
## Höhmann (2017)            -0.0300 [-0.0496; -0.0104]        7.1
## Höhmann (2017)            -0.0400 [-0.0792; -0.0008]        7.0
## Drew and Dollery (2017)    0.0770 [ 0.0221;  0.1319]        6.8
## Drew and Dollery (2017)    0.0310 [-0.0121;  0.0741]        6.9
## Pettersson-Lidbom (2012) -0.1590 [-0.2394; -0.0786]        6.4
## Pettersson-Lidbom (2012) -0.1470 [-0.2274; -0.0666]        6.4
## Pettersson-Lidbom (2012) -0.0900 [-0.1645; -0.0155]        6.5
## Pettersson-Lidbom (2012) -0.0810 [-0.1574; -0.0046]        6.5
## Pettersson-Lidbom (2012) -0.0880 [-0.1625; -0.0135]        6.5
## Pettersson-Lidbom (2012)  0.2100 [ 0.1649;  0.2551]        6.9
## Pettersson-Lidbom (2012)  0.1570 [ 0.0845;  0.2295]        6.5
## Pettersson-Lidbom (2012) -0.1990 [-0.2774; -0.1206]        6.4
## Pettersson-Lidbom (2012) -0.1690 [-0.2494; -0.0886]        6.4
##
## Number of studies combined: k = 15
##
##                          SMD            95%-CI     t p-value
## Random effects model -0.0463 [-0.1142; 0.0216] -1.46  0.1655
## Prediction interval          [-0.3105; 0.2178]
##
## Quantifying heterogeneity:
##  tau^2 = 0.0139 [0.0070; 0.0364]; tau = 0.1181 [0.0836; 0.1908];
##  I^2 = 93.8% [91.2%; 95.6%]; H = 4.00 [3.38; 4.75]
##
## Test of heterogeneity:
##       Q d.f.  p-value
##  224.56   14 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
```

```
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

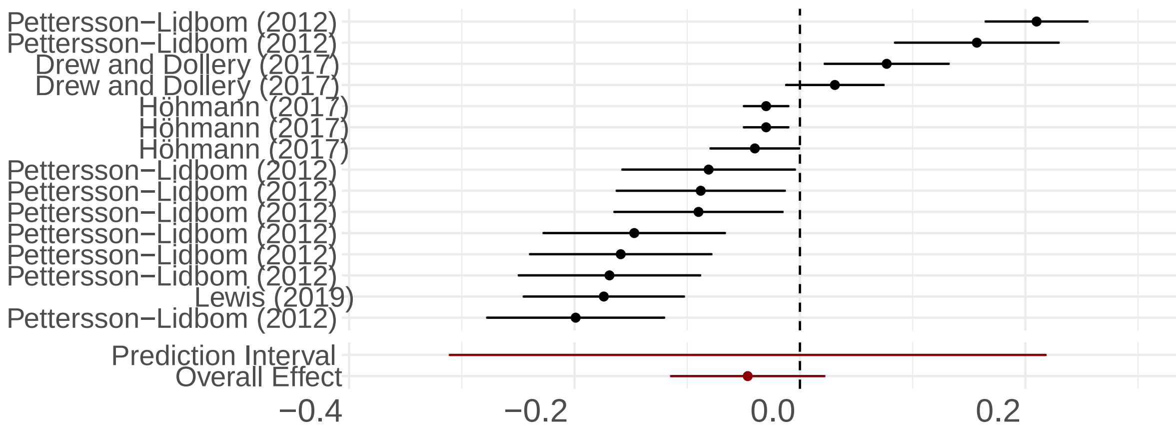


Figure 20: Effect of lower houses size (N) on log of per capita expenditure (logExpPC)

Highlights:

1. The results are highly heterogeneous: $Iˆ2 = $ 93.77.
2. The Random effects modem SMD estimated is $g = $ -0.05 ($SE = 0.032$).
3. The prediction interval ranges from -0.31 to 0.22. Therefore, it emcompasses zero.

ExpPC x logN

There were no studies that had per capita expenditure in the dependent variable and log of lower house size in the treatment variable.

PCTGDP x logN

This meta-regression investigates the percentage of GDP as public expenditure as the dependent variable and the log lower house size (logN) as the treatment variable.

```
# Pooling effects analysis -- PCTGDP x logN
aux <- fulldat %>%
  filter(indepvar2 == 'logN',
         depvar2 == 'PCTGDP')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                         SMD            95%-CI %W(random)
## Baqir (1999)         2.0660 [ 1.4887; 2.6433]       18.9
## Baqir (1999)         2.0120 [ 1.4235; 2.6005]       18.8
## Baqir (1999)         2.4680 [ 1.8817; 3.0543]       18.8
## Lledo (2003)        -4.6900 [-9.9427; 0.5627]        3.8
## Stein et al. (1998)  0.0109 [-0.0171; 0.0389]       19.8
## Stein et al. (1998)  0.0135 [-0.0102; 0.0372]       19.8
##
## Number of studies combined: k = 6
##
##                         SMD            95%-CI    t p-value
## Random effects model 1.0619 [-0.7256; 2.8493] 1.53  0.1873
## Prediction interval         [-3.0267; 5.1504]
##
## Quantifying heterogeneity:
##  tau^2 = 1.6850 [0.6497; 38.1618]; tau = 1.2981 [0.8060; 6.1775];
##  I^2 = 96.9% [95.2%; 98.1%]; H = 5.71 [4.55; 7.16]
##
## Test of heterogeneity:
##       Q d.f.  p-value
##  163.00    5 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

Highlights:

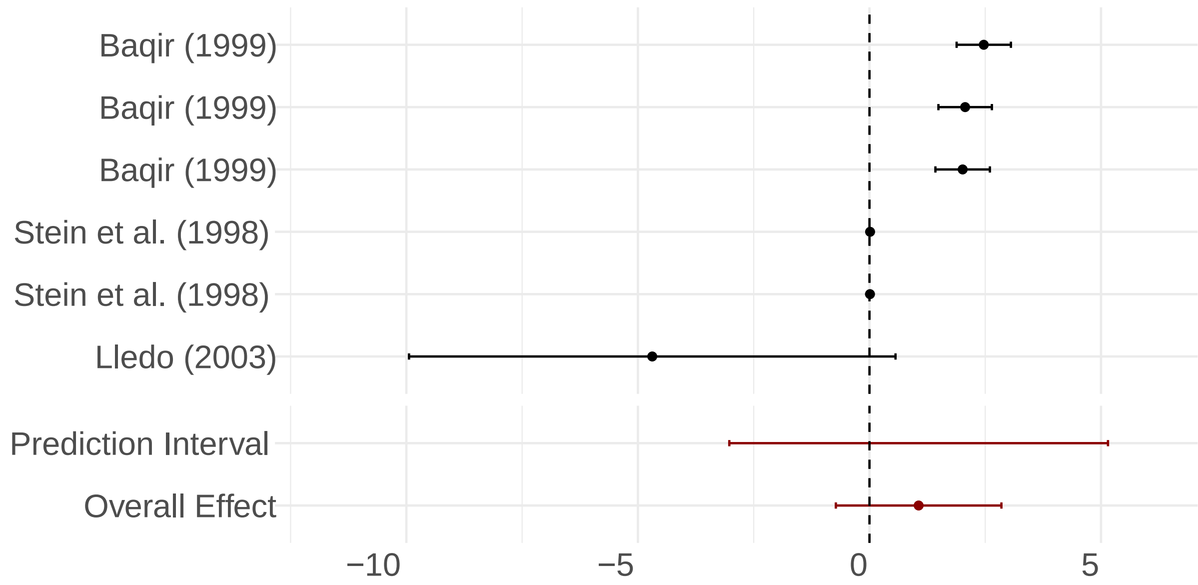


Figure 21: Effect of log lower houses size (logN) on the GDP share of public expenditure (PCTGDP)

1. The results are highly heterogeneous: \$Iˆ2 = \$ 96.93.
2. The Random effects modem SMD estimated is \$g = \$ 1.06 ($SE = 0.695$).
3. The prediction interval ranges from -3.03 to 5.15. Therefore, it emcompasses zero.

logExpPC x logN

In this specification, we study the log of per capita expenditure (logExpPC) as a function of the log of lower house size (logN).

```r
# Pooling effects analysis -- logExpPC x logN
aux <- fulldat %>%
  filter(indepvar2 == 'logN',
         depvar2 == 'logExpPC')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                       SMD           95%-CI %W(random)
## MacDonald (2008) 0.1360 [0.0447; 0.2273]        7.9
## MacDonald (2008) 0.2319 [0.1322; 0.3316]        7.4
## MacDonald (2008) 0.1443 [0.0471; 0.2415]        7.6
## MacDonald (2008) 0.1594 [0.0667; 0.2521]        7.8
## MacDonald (2008) 0.2259 [0.1163; 0.3355]        6.9
## Baqir (2002)     0.1127 [0.0396; 0.1858]        9.1
## Baqir (2002)     0.2760 [0.2007; 0.3513]        8.9
## Baqir (2002)     0.3021 [0.2270; 0.3772]        8.9
## Baqir (2002)     0.3203 [0.2450; 0.3956]        8.9
## Baqir (1999)     0.3020 [0.2269; 0.3771]        8.9
## Baqir (1999)     0.2760 [0.2007; 0.3513]        8.9
## Baqir (1999)     0.2950 [0.2165; 0.3735]        8.7
##
## Number of studies combined: k = 12
##
##                           SMD           95%-CI     t  p-value
## Random effects model 0.2346 [0.1864; 0.2828] 10.71 < 0.0001
## Prediction interval         [0.0848; 0.3844]
##
## Quantifying heterogeneity:
##  tau^2 = 0.0040 [0.0011; 0.0145]; tau = 0.0636 [0.0335; 0.1203];
##  I^2 = 70.0% [45.6%; 83.4%]; H = 1.82 [1.36; 2.45]
##
## Test of heterogeneity:
##      Q d.f. p-value
##  36.62   11  0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

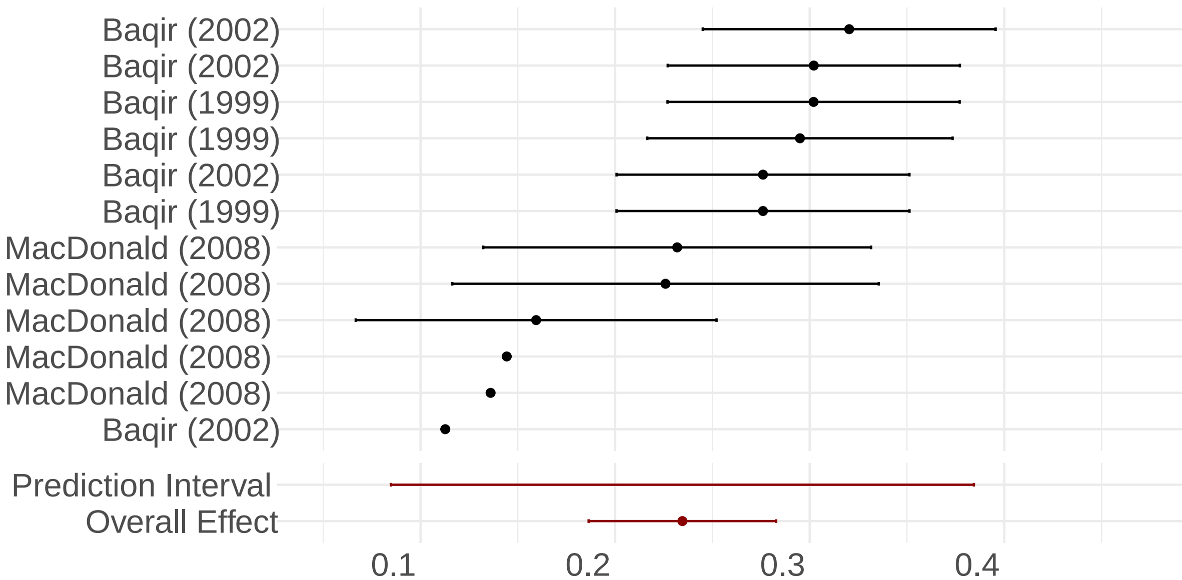


Figure 22: Effect of log lower houses size (logN) on the log of per capita government expenditure (logExpPC)

Highlights:

1. The results are highly heterogeneous: \$I^2 = \$ 69.96.
2. The Random effects modem SMD estimated is \$g = \$ 0.23 ($SE = 0.022$). **This model is significant at the 10% confidence level.**
3. The prediction interval ranges from 0.08 to 0.38. Therefore, it does not emcompasses zero.

ExpPC x K

Now we are investigating the upper house size (K). In this model, we investigate the effect of upper house size on expenditure per capita (ExpPC).

```
# Pooling effects analysis -- ExpPC x K
aux <- fulldat %>%
  filter(indepvar2 == 'K',
         depvar2 == 'ExpPC')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                                     SMD             95%-CI %W(random)
## Crowley (2019)                   8.2100 [  0.2702; 16.1498]        4.8
## Crowley (2019)                   8.4230 [-27.1895; 44.0355]        0.4
## Crowley (2019)                   9.5940 [  2.1383; 17.0497]        5.1
## Lee and Park (2018)             19.7400 [  3.2645; 36.2155]        1.7
## Lee and Park (2018)             10.0600 [  2.2887; 17.8313]        4.9
## Lee and Park (2018)              9.0620 [-30.8821; 49.0061]        0.3
## Lee (2016)                      38.4400 [  0.7499; 76.1301]        0.4
## Lee (2016)                      37.8500 [  3.0214; 72.6786]        0.4
## Lee (2016)                      25.6100 [ -0.8103; 52.0303]        0.8
## Lee (2016)                       5.9960 [-19.6011; 31.5931]        0.8
## Lee (2016)                      25.5600 [ -0.8799; 51.9999]        0.8
## Lee (2016)                       4.6930 [-19.5126; 28.8986]        0.9
## Bradbury and Stephenson (2009)  0.6240 [  0.2295;  1.0185]       10.0
## Chen and Malhotra (2007)        26.0900 [ 11.4883; 40.6917]        2.1
## Chen and Malhotra (2007)         8.3000 [  3.6941; 12.9059]        7.3
## Chen and Malhotra (2007)         5.1400 [  0.1813; 10.0987]        7.0
## Chen and Malhotra (2007)         4.7800 [ -0.9039; 10.4639]        6.4
## Chen and Malhotra (2007)        20.3800 [  7.6990; 33.0610]        2.6
## Chen and Malhotra (2007)         4.8700 [  1.2833;  8.4567]        8.2
## Chen and Malhotra (2007)        26.7500 [  0.8589; 52.6411]        0.8
## Primo (2006)                     0.9700 [ -0.4804;  2.4204]        9.7
## Primo (2006)                     5.9000 [  2.6857;  9.1143]        8.5
## Primo (2006)                     5.7500 [  2.3593;  9.1407]        8.4
## Primo (2006)                     6.9600 [  2.6089; 11.3111]        7.6
##
## Number of studies combined: k = 24
##
##                         SMD             95%-CI    t  p-value
## Random effects model 7.2162 [ 4.4400;  9.9925] 5.38 < 0.0001
## Prediction interval         [-1.2217; 15.6542]
##
## Quantifying heterogeneity:
##  tau^2 = 14.7532 [5.4141; 111.2304]; tau = 3.8410 [2.3268; 10.5466];
##  I^2 = 77.7% [67.3%; 84.8%]; H = 2.12 [1.75; 2.57]
```

```
##
## Test of heterogeneity:
##       Q d.f.  p-value
##  103.34   23 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

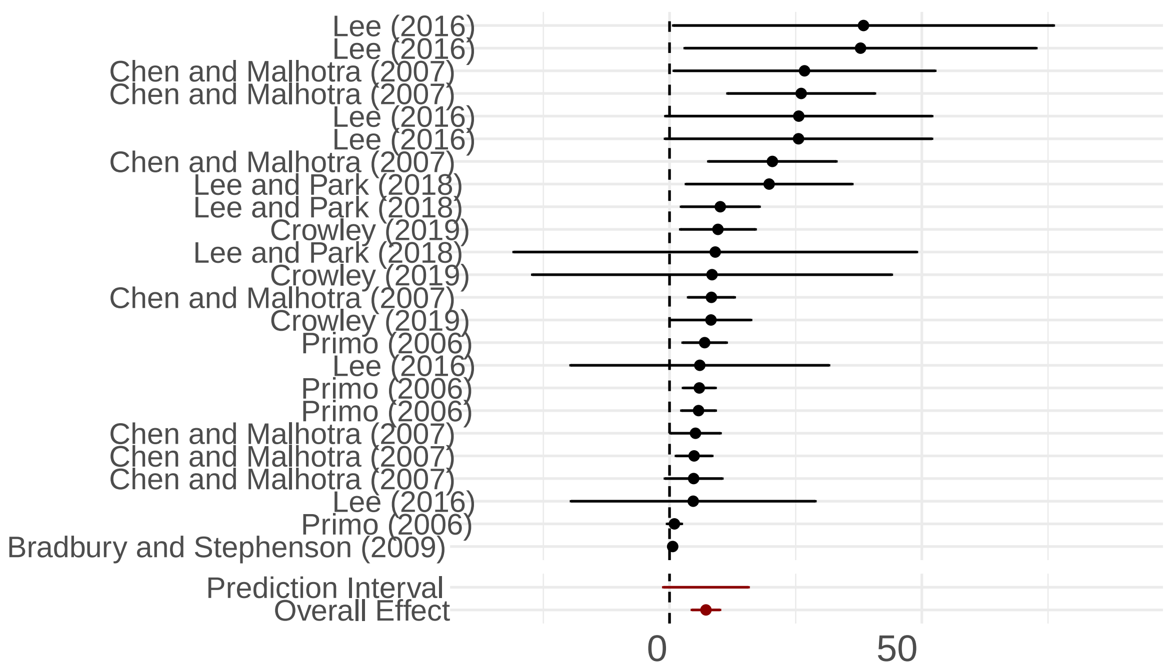


Figure 23: Effect of upper house size (K) on the per capita government expenditure (ExpPC)

Highlights:

1. The results are highly heterogeneous: $I^2 = $ 77.74.
2. The Random effects modem SMD estimated is $g = $ 7.22 ($SE = 1.342$).
3. The prediction interval ranges from -1.22 to 15.65. Therefore, it emcompasses zero.

PCTGDP x K

This model looks into the effect of upper house size (K) on the public expenditure share of the GDP (PCTGDP).

```r
# Pooling effects analysis -- PCTGDP x K
aux <- fulldat %>%
  filter(indepvar2 == 'K',
         depvar2 == 'PCTGDP')

mod <- metagen(coef, SE, data=aux,
          studlab=paste(authoryear),
          comb.fixed = FALSE,
          comb.random = TRUE,
          method.tau = "REML",
          hakn = TRUE,
          prediction=TRUE,
          sm="SMD")
mod
```

```
##                                SMD             95%-CI %W(random)
## Maldonado (2012)           -0.0400 [-0.0659; -0.0141]        5.7
## Bradbury and Crain (2001)  0.0126 [ 0.0010;  0.0243]        9.8
## Bradbury and Crain (2001)  0.0050 [ 0.0016;  0.0083]       11.8
## Bradbury and Crain (2001) -0.0113 [-0.0163; -0.0064]       11.5
## Bradbury and Crain (2001) -0.0056 [-0.0102; -0.0010]       11.6
## Ricciuti (2004)            0.0160 [-0.0075;  0.0395]        6.2
## Ricciuti (2004)            0.0210 [-0.0006;  0.0426]        6.7
## Ricciuti (2004)            0.0140 [-0.0036;  0.0316]        7.9
## Ricciuti (2004)            0.0030 [-0.0088;  0.0148]        9.7
## Ricciuti (2004)            0.0300 [-0.0210;  0.0810]        2.2
## Ricciuti (2004)            0.0300 [-0.0210;  0.0810]        2.2
## Ricciuti (2004)            0.0390 [-0.0022;  0.0802]        3.1
## Ricciuti (2004)            0.0127 [-0.0147;  0.0401]        5.3
## Ricciuti (2004)            0.0160 [-0.0075;  0.0395]        6.2
##
## Number of studies combined: k = 14
##
##                          SMD            95%-CI    t p-value
## Random effects model 0.0056 [-0.0042; 0.0155] 1.24  0.2376
## Prediction interval         [-0.0233; 0.0346]
##
## Quantifying heterogeneity:
##  tau^2 = 0.0002 [0.0001; 0.0008]; tau = 0.0125 [0.0109; 0.0279];
##  I^2 = 80.0% [67.3%; 87.8%]; H = 2.24 [1.75; 2.86]
##
## Test of heterogeneity:
##      Q d.f.  p-value
##  65.02   13 < 0.0001
##
## Details on meta-analytical method:
## - Inverse variance method
## - Restricted maximum-likelihood estimator for tau^2
## - Q-profile method for confidence interval of tau^2 and tau
## - Hartung-Knapp adjustment for random effects model
```

And the forest plot:

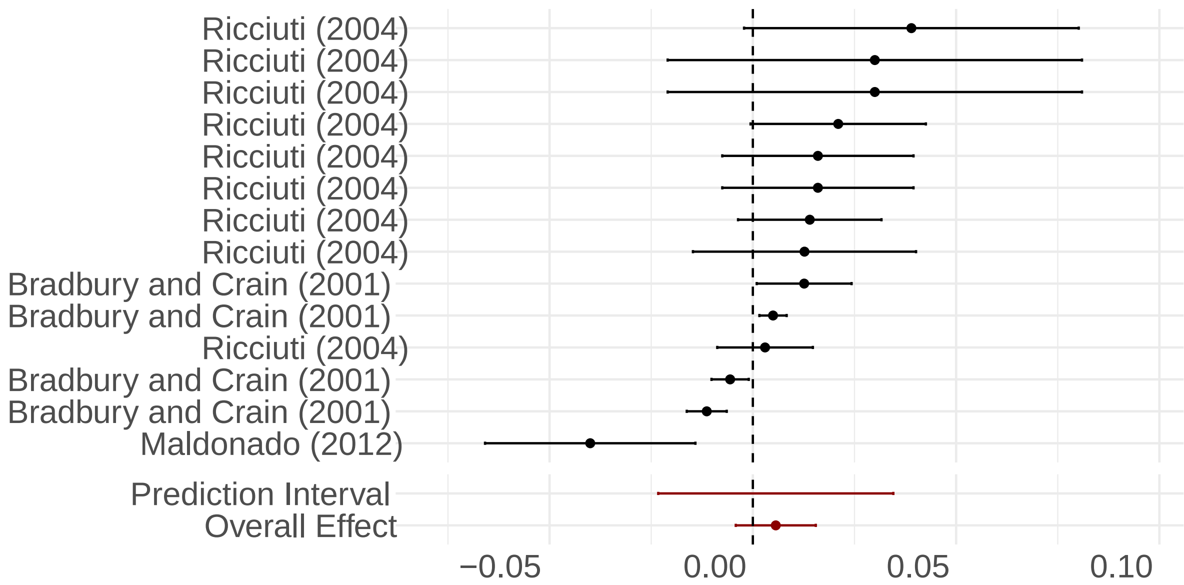


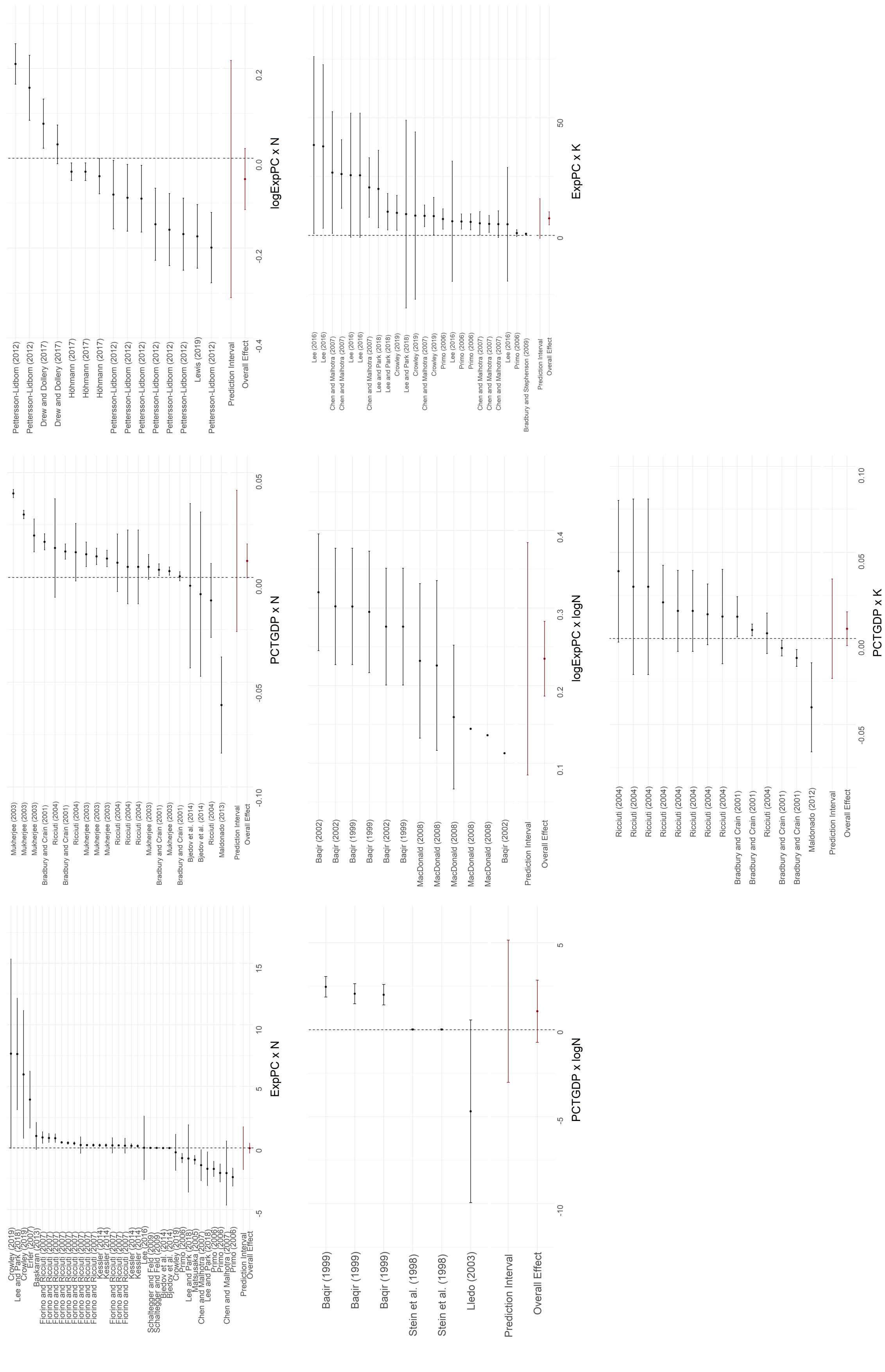
Figure 24: Effect of upper house size (K) on the public expenditure share of the GDP (PCTGDP)

Highlights:

1. The results are highly heterogeneous: $I^2 = $ 80.01.
2. The Random effects modem SMD estimated is $g = $ 0.01 ($SE = 0.005$).
3. The prediction interval ranges from -0.02 to 0.03. Therefore, it emcompasses zero.

logExpPC x K

No studies related the log of per capita expenditure with the size of upper house (K).


logExpPC x N
ExpPC x K
PCTGDP x N
logExpPC x logN
PCTGDP x K
ExpPC x N
PCTGDP x logN

Meta-regressions

Meta-regressions for Expenditure measured as

Meta-regressions for Expenditure as a Percentage of the GDP

estimate	se	tval	pval	ci.lb	ci.ub	model
7.3697	1.7616	4.1835	0.0527	-0.2099	14.9493	PCTGDP
-0.0094	0.0030	-3.1174	0.0893	-0.0223	0.0036	PCTGDP
-4.7067	1.4637	-3.2156	0.0846	-11.0045	1.5912	PCTGDP
-0.0003	0.0005	-0.6899	0.5615	-0.0024	0.0017	PCTGDP
0.0633	0.0078	8.1139	0.0149	0.0297	0.0969	PCTGDP
-2.0554	0.1611	-12.7621	0.0061	-2.7484	-1.3625	PCTGDP
0.0556	0.0071	7.7913	0.0161	0.0249	0.0864	PCTGDP
-4.6992	1.4637	-3.2106	0.0848	-10.9969	1.5984	PCTGDP
-4.6959	1.4637	-3.2082	0.0850	-10.9937	1.6019	PCTGDP

```
summary(mod)
```

```
##
## Mixed-Effects Model (k = 11; tau^2 estimator: REML)
##
##   logLik  deviance       AIC       BIC      AICc
##   7.0993  -14.1987    5.8013   -7.2672  225.8013
##
## tau^2 (estimated amount of residual heterogeneity):     0 (SE = 0.0001)
## tau (square root of estimated tau^2 value):             0
## I^2 (residual heterogeneity / unaccounted variability): 0.00%
## H^2 (unaccounted variability / sampling variability):   1.00
## R^2 (amount of heterogeneity accounted for):            100.00%
##
## Test for Residual Heterogeneity:
## QE(df = 2) = 0.5965, p-val = 0.7421
##
## Test of Moderators (coefficients 2:9):
## F(df1 = 8, df2 = 2) = 40.7363, p-val = 0.0242
##
## Model Results:
##
##                            estimate      se       tval    pval     ci.lb    ci.ub
## intrcpt                      7.3697  1.7616     4.1835  0.0527   -0.2099  14.9493
## indepvar2N                  -0.0094  0.0030    -3.1174  0.0893   -0.0223   0.0036
## indepvar2logN               -4.7067  1.4637    -3.2156  0.0846  -11.0045   1.5912
## year                        -0.0003  0.0005    -0.6899  0.5615   -0.0024   0.0017
## publishedNo                  0.0633  0.0078     8.1139  0.0149    0.0297   0.0969
## elecsys2Non-Majoritarian    -2.0554  0.1611   -12.7621  0.0061   -2.7484  -1.3625
## methodPANEL                  0.0556  0.0071     7.7913  0.0161    0.0249   0.0864
## agglevelStates              -4.6992  1.4637    -3.2106  0.0848  -10.9969   1.5984
## location2World              -4.6959  1.4637    -3.2082  0.0850  -10.9937   1.6019
##
## intrcpt                    .
## indepvar2N                 .
## indepvar2logN              .
## year
```

```
## publishedNo              *
## elecsys2Non-Majoritarian  **
## methodPANEL              *
## agglevelStates           .
## location2World           .
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

As we have considerable heterogeneity in our sample, we run a permutation test to ensure the validity of our estimates. The results follow below.

```
## Error in rma.uni(x$yi, x$vi, weights = x$weights, mods = cbind(X[sample(x$k),  :
##   Fisher scoring algorithm did not converge. See 'help(rma)' for possible remedies.
## Error in rma.uni(x$yi, x$vi, weights = x$weights, mods = cbind(X[sample(x$k),  :
##   Fisher scoring algorithm did not converge. See 'help(rma)' for possible remedies.
```

```
##
## Test of Moderators (coefficients 2:9):
## F(df1 = 8, df2 = 2) = 40.7363, p-val* = 0.0130
##
## Model Results:
##
##                           estimate      se      tval   pval*     ci.lb    ci.ub
## intrcpt                     7.3697  1.7616    4.1835  0.0360   -0.2099  14.9493
## indepvar2N                 -0.0094  0.0030   -3.1174  0.0190   -0.0223   0.0036
## indepvar2logN              -4.7067  1.4637   -3.2156  0.2010  -11.0045   1.5912
## year                       -0.0003  0.0005   -0.6899  0.4350   -0.0024   0.0017
## publishedNo                 0.0633  0.0078    8.1139  0.0140    0.0297   0.0969
## elecsys2Non-Majoritarian   -2.0554  0.1611  -12.7621  0.0090   -2.7484  -1.3625
## methodPANEL                 0.0556  0.0071    7.7913  0.0140    0.0249   0.0864
## agglevelStates             -4.6992  1.4637   -3.2106  0.2170  -10.9969   1.5984
## location2World             -4.6959  1.4637   -3.2082  0.2790  -10.9937   1.6019
##
## intrcpt                    *
## indepvar2N                 *
## indepvar2logN
## year
## publishedNo                *
## elecsys2Non-Majoritarian  **
## methodPANEL                *
## agglevelStates
## location2World
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

estimate	se	tval	pval	ci.lb	ci.ub	model
7.3697	1.7616	4.1835	0.036	-0.2099	14.9493	PCTGDP - Permutation
-0.0094	0.0030	-3.1174	0.019	-0.0223	0.0036	PCTGDP - Permutation
-4.7067	1.4637	-3.2156	0.201	-11.0045	1.5912	PCTGDP - Permutation
-0.0003	0.0005	-0.6899	0.435	-0.0024	0.0017	PCTGDP - Permutation
0.0633	0.0078	8.1139	0.014	0.0297	0.0969	PCTGDP - Permutation
-2.0554	0.1611	-12.7621	0.009	-2.7484	-1.3625	PCTGDP - Permutation
0.0556	0.0071	7.7913	0.014	0.0249	0.0864	PCTGDP - Permutation
-4.6992	1.4637	-3.2106	0.217	-10.9969	1.5984	PCTGDP - Permutation
-4.6959	1.4637	-3.2082	0.279	-10.9937	1.6019	PCTGDP - Permutation

We have the following results for the meta-regressions of Expenditure Per Capita:

1. Compared with `K`, models with `N` and `logN` find significantly negative coefficients.
2. Year has null effect.
3. Unpublished papers tend to have higher coefficients than published papers.
4. Passing from `Majoritarian` to `Non-Majoritarian`, decreases significantly the effects found in our models.
5. In terms of the modeling, passing from `OLS` to `PANEL` increases the detected effects.
6. When passing from `Local` to `State` or `World` levels, it decreases the detected effect size.

Below we also run the meta-regressions adding all coefficients in the papers. The results follow below:

estimate	se	tval	pval	ci.lb	ci.ub	model
-5.3830	5.8900	-0.9139	0.3676	-17.3805	6.6145	PCTGDP - All coefs
-0.0014	0.0048	-0.2945	0.7703	-0.0112	0.0084	PCTGDP - All coefs
-4.6069	2.4363	-1.8909	0.0677	-9.5696	0.3558	PCTGDP - All coefs
0.0060	0.0027	2.2730	0.0299	0.0006	0.0114	PCTGDP - All coefs
0.1130	0.0251	4.5060	0.0001	0.0619	0.1641	PCTGDP - All coefs
-2.1629	0.1568	-13.7904	0.0000	-2.4823	-1.8434	PCTGDP - All coefs
0.1252	0.0304	4.1232	0.0002	0.0633	0.1870	PCTGDP - All coefs
-4.7325	2.4361	-1.9426	0.0609	-9.6947	0.2298	PCTGDP - All coefs
-4.6443	2.4362	-1.9064	0.0656	-9.6067	0.3181	PCTGDP - All coefs

```r
summary(mod)
```

```
##
## Mixed-Effects Model (k = 41; tau^2 estimator: REML)
##
##    logLik   deviance        AIC        BIC       AICc
##   89.1145  -178.2290  -158.2290  -143.5716  -147.7528
##
## tau^2 (estimated amount of residual heterogeneity):     0.0001 (SE = 0.0000)
## tau (square root of estimated tau^2 value):             0.0102
## I^2 (residual heterogeneity / unaccounted variability): 94.05%
## H^2 (unaccounted variability / sampling variability):   16.81
## R^2 (amount of heterogeneity accounted for):            99.92%
##
## Test for Residual Heterogeneity:
## QE(df = 32) = 1001.8067, p-val < .0001
##
## Test of Moderators (coefficients 2:9):
## F(df1 = 8, df2 = 32) = 29.7201, p-val < .0001
```

```
##
## Model Results:
##
##                          estimate      se      tval    pval     ci.lb    ci.ub
## intrcpt                   -5.3830  5.8900   -0.9139  0.3676  -17.3805   6.6145
## indepvar2N                -0.0014  0.0048   -0.2945  0.7703   -0.0112   0.0084
## indepvar2logN             -4.6069  2.4363   -1.8909  0.0677   -9.5696   0.3558
## year                       0.0060  0.0027    2.2730  0.0299    0.0006   0.0114
## publishedNo                0.1130  0.0251    4.5060  <.0001    0.0619   0.1641
## elecsys2Non-Majoritarian  -2.1629  0.1568  -13.7904  <.0001   -2.4823  -1.8434
## methodPANEL                0.1252  0.0304    4.1232  0.0002    0.0633   0.1870
## agglevelStates            -4.7325  2.4361   -1.9426  0.0609   -9.6947   0.2298
## location2World            -4.6443  2.4362   -1.9064  0.0656   -9.6067   0.3181
##
## intrcpt
## indepvar2N
## indepvar2logN               .
## year                        *
## publishedNo               ***
## elecsys2Non-Majoritarian  ***
## methodPANEL               ***
## agglevelStates              .
## location2World              .
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Test of Moderators (coefficients 2:9):
## F(df1 = 8, df2 = 32) = 29.7201, p-val* = 0.0010
##
## Model Results:
##
##                          estimate      se      tval   pval*     ci.lb    ci.ub
## intrcpt                   -5.3830  5.8900   -0.9139  0.2800  -17.3805   6.6145
## indepvar2N                -0.0014  0.0048   -0.2945  0.7390   -0.0112   0.0084
## indepvar2logN             -4.6069  2.4363   -1.8909  0.0910   -9.5696   0.3558
## year                       0.0060  0.0027    2.2730  0.0090    0.0006   0.0114
## publishedNo                0.1130  0.0251    4.5060  0.0020    0.0619   0.1641
## elecsys2Non-Majoritarian  -2.1629  0.1568  -13.7904  0.0010   -2.4823  -1.8434
## methodPANEL                0.1252  0.0304    4.1232  0.0020    0.0633   0.1870
## agglevelStates            -4.7325  2.4361   -1.9426  0.0840   -9.6947   0.2298
## location2World            -4.6443  2.4362   -1.9064  0.0950   -9.6067   0.3181
##
## intrcpt
## indepvar2N
## indepvar2logN               .
## year                       **
## publishedNo                **
## elecsys2Non-Majoritarian  ***
## methodPANEL                **
## agglevelStates              .
## location2World              .
##
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

estimate	se	tval	pval	ci.lb	ci.ub	model
-5.3830	5.8900	-0.9139	0.280	-17.3805	6.6145	PCTGDP - All coefs - Permutation
-0.0014	0.0048	-0.2945	0.739	-0.0112	0.0084	PCTGDP - All coefs - Permutation
-4.6069	2.4363	-1.8909	0.091	-9.5696	0.3558	PCTGDP - All coefs - Permutation
0.0060	0.0027	2.2730	0.009	0.0006	0.0114	PCTGDP - All coefs - Permutation
0.1130	0.0251	4.5060	0.002	0.0619	0.1641	PCTGDP - All coefs - Permutation
-2.1629	0.1568	-13.7904	0.001	-2.4823	-1.8434	PCTGDP - All coefs - Permutation
0.1252	0.0304	4.1232	0.002	0.0633	0.1870	PCTGDP - All coefs - Permutation
-4.7325	2.4361	-1.9426	0.084	-9.6947	0.2298	PCTGDP - All coefs - Permutation
-4.6443	2.4362	-1.9064	0.095	-9.6067	0.3181	PCTGDP - All coefs - Permutation

For all the coefficients, we have the following results:

1. Compared with `K`, models with `N` and `logN` tend to have significantly negative coefficients.
2. Year has a positive effect: the younger the publication, the higher the detected coefficient.
3. Unpublished papers tend to have higher coefficients than published papers.
4. Passing from `Majoritarian` to `Non-Majoritarian`, decreases significantly the effects found in our models.
5. In terms of the modeling, passing from `OLS` to `PANEL` increases the detected effects.
6. When passing from `Local` to `State` or `World` levels, it decreases the detected effect size.

Meta-regressions for Expenditure Per Capita

estimate	se	tval	pval	ci.lb	ci.ub	model
-104.0701	318.9300	-0.3263	0.7503	-806.0302	597.8900	ExpPC
-2.9238	2.0932	-1.3968	0.1900	-7.5309	1.6834	ExpPC
0.0525	0.1586	0.3308	0.7470	-0.2967	0.4017	ExpPC
0.3458	1.5533	0.2226	0.8279	-3.0730	3.7645	ExpPC
1.4571	2.2376	0.6512	0.5283	-3.4679	6.3821	ExpPC
1.4936	2.6675	0.5599	0.5868	-4.3776	7.3648	ExpPC
-0.0915	2.4255	-0.0377	0.9706	-5.4299	5.2470	ExpPC

```r
summary(mod)
```

```
##
## Mixed-Effects Model (k = 18; tau^2 estimator: REML)
##
##   logLik  deviance       AIC       BIC      AICc
## -34.6251   69.2502   85.2502   88.4333  157.2502
##
## tau^2 (estimated amount of residual heterogeneity):     1.8429 (SE = 1.2361)
## tau (square root of estimated tau^2 value):             1.3575
## I^2 (residual heterogeneity / unaccounted variability): 95.05%
## H^2 (unaccounted variability / sampling variability):   20.21
## R^2 (amount of heterogeneity accounted for):            0.00%
##
## Test for Residual Heterogeneity:
## QE(df = 11) = 45.4940, p-val < .0001
##
```

```
## Test of Moderators (coefficients 2:7):
## F(df1 = 6, df2 = 11) = 0.3429, p-val = 0.8998
##
## Model Results:
##
##                          estimate        se     tval    pval      ci.lb
## intrcpt                 -104.0701  318.9300  -0.3263  0.7503  -806.0302
## indepvar2N                -2.9238    2.0932  -1.3968  0.1900    -7.5309
## year                       0.0525    0.1586   0.3308  0.7470    -0.2967
## elecsys2Non-Majoritarian   0.3458    1.5533   0.2226  0.8279    -3.0730
## methodPANEL                1.4571    2.2376   0.6512  0.5283    -3.4679
## methodIV                   1.4936    2.6675   0.5599  0.5868    -4.3776
## agglevelStates            -0.0915    2.4255  -0.0377  0.9706    -5.4299
##                             ci.ub
## intrcpt                  597.8900
## indepvar2N                 1.6834
## year                       0.4017
## elecsys2Non-Majoritarian   3.7645
## methodPANEL                6.3821
## methodIV                   7.3648
## agglevelStates             5.2470
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

As we have considerable heterogeneity in our sample, we run a permutation test to ensure the validity of our estimates. The results follow below.

```
## Error in rma.uni(x$yi, x$vi, weights = x$weights, mods = cbind(X[sample(x$k),  :
##   Fisher scoring algorithm did not converge. See 'help(rma)' for possible remedies.
## Error in rma.uni(x$yi, x$vi, weights = x$weights, mods = cbind(X[sample(x$k),  :
##   Fisher scoring algorithm did not converge. See 'help(rma)' for possible remedies.
## Error in rma.uni(x$yi, x$vi, weights = x$weights, mods = cbind(X[sample(x$k),  :
##   Fisher scoring algorithm did not converge. See 'help(rma)' for possible remedies.
## Error in rma.uni(x$yi, x$vi, weights = x$weights, mods = cbind(X[sample(x$k),  :
##   Fisher scoring algorithm did not converge. See 'help(rma)' for possible remedies.
```

```
##
## Test of Moderators (coefficients 2:7):
## F(df1 = 6, df2 = 11) = 0.3429, p-val* = 0.5900
##
## Model Results:
##
##                          estimate        se     tval   pval*      ci.lb
## intrcpt                 -104.0701  318.9300  -0.3263  0.6300  -806.0302
## indepvar2N                -2.9238    2.0932  -1.3968  0.0650    -7.5309
## year                       0.0525    0.1586   0.3308  0.6270    -0.2967
## elecsys2Non-Majoritarian   0.3458    1.5533   0.2226  0.7180    -3.0730
## methodPANEL                1.4571    2.2376   0.6512  0.3330    -3.4679
## methodIV                   1.4936    2.6675   0.5599  0.4380    -4.3776
## agglevelStates            -0.0915    2.4255  -0.0377  0.9440    -5.4299
##                             ci.ub
## intrcpt                  597.8900
## indepvar2N                 1.6834  .
## year                       0.4017
```

```
## elecsys2Non-Majoritarian    3.7645
## methodPANEL                 6.3821
## methodIV                    7.3648
## agglevelStates              5.2470
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

estimate	se	tval	pval	ci.lb	ci.ub	model
-104.0701	318.9300	-0.3263	0.630	-806.0302	597.8900	ExpPC - Permutation
-2.9238	2.0932	-1.3968	0.065	-7.5309	1.6834	ExpPC - Permutation
0.0525	0.1586	0.3308	0.627	-0.2967	0.4017	ExpPC - Permutation
0.3458	1.5533	0.2226	0.718	-3.0730	3.7645	ExpPC - Permutation
1.4571	2.2376	0.6512	0.333	-3.4679	6.3821	ExpPC - Permutation
1.4936	2.6675	0.5599	0.438	-4.3776	7.3648	ExpPC - Permutation
-0.0915	2.4255	-0.0377	0.944	-5.4299	5.2470	ExpPC - Permutation

We have the following results for the meta-regressions of Expenditure Per Capita:

1. Compared with `K`, models with `N` tend to detect significantly smaller effects.
2. Year has null effect.
3. Passing the electoral rules from `Majoritarian` to `Non-Majoritarian`, increases significantly the per capita expenditure found in our models.
4. In terms of the modeling, passing from `OLS` to `PANEL` or `IV` increases the detected effects.
5. When passing from `Local` to `State` level, decreases the detected effects.

Below we also run the meta-regressions adding all coefficients in the papers. The results follow below:

estimate	se	tval	pval	ci.lb	ci.ub	model
-296.9072	166.6870	-1.7812	0.0806	-631.2389	37.4245	ExpPC - All coefs
-5.4468	0.9692	-5.6201	0.0000	-7.3907	-3.5029	ExpPC - All coefs
0.1503	0.0830	1.8117	0.0757	-0.0161	0.3167	ExpPC - All coefs
1.0236	0.7701	1.3293	0.1894	-0.5209	2.5682	ExpPC - All coefs
-0.1422	0.8136	-0.1747	0.8620	-1.7739	1.4896	ExpPC - All coefs
0.1907	0.8223	0.2319	0.8175	-1.4587	1.8401	ExpPC - All coefs
-0.2008	1.0049	-0.1998	0.8424	-2.2164	1.8149	ExpPC - All coefs

```r
summary(mod)
```

```
##
## Mixed-Effects Model (k = 60; tau^2 estimator: REML)
##
##    logLik   deviance        AIC        BIC       AICc
## -141.1228   282.2456   298.2456   314.0079   301.5183
##
## tau^2 (estimated amount of residual heterogeneity):     1.7264 (SE = 0.4944)
## tau (square root of estimated tau^2 value):             1.3139
## I^2 (residual heterogeneity / unaccounted variability): 99.80%
## H^2 (unaccounted variability / sampling variability):   500.07
## R^2 (amount of heterogeneity accounted for):            39.21%
##
## Test for Residual Heterogeneity:
## QE(df = 53) = 325.8548, p-val < .0001
```

```
##
## Test of Moderators (coefficients 2:7):
## F(df1 = 6, df2 = 53) = 5.9441, p-val < .0001
##
## Model Results:
##
##                          estimate        se     tval    pval      ci.lb
## intrcpt                 -296.9072  166.6870  -1.7812  0.0806  -631.2389
## indepvar2N                -5.4468    0.9692  -5.6201  <.0001    -7.3907
## year                       0.1503    0.0830   1.8117  0.0757    -0.0161
## elecsys2Non-Majoritarian   1.0236    0.7701   1.3293  0.1894    -0.5209
## methodPANEL               -0.1422    0.8136  -0.1747  0.8620    -1.7739
## methodIV                   0.1907    0.8223   0.2319  0.8175    -1.4587
## agglevelStates            -0.2008    1.0049  -0.1998  0.8424    -2.2164
##                            ci.ub
## intrcpt                  37.4245    .
## indepvar2N               -3.5029  ***
## year                      0.3167    .
## elecsys2Non-Majoritarian  2.5682
## methodPANEL               1.4896
## methodIV                  1.8401
## agglevelStates            1.8149
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Test of Moderators (coefficients 2:7):
## F(df1 = 6, df2 = 53) = 5.9441, p-val* = 0.0010
##
## Model Results:
##
##                          estimate        se     tval   pval*      ci.lb
## intrcpt                 -296.9072  166.6870  -1.7812  0.0170  -631.2389
## indepvar2N                -5.4468    0.9692  -5.6201  0.0010    -7.3907
## year                       0.1503    0.0830   1.8117  0.0150    -0.0161
## elecsys2Non-Majoritarian   1.0236    0.7701   1.3293  0.0730    -0.5209
## methodPANEL               -0.1422    0.8136  -0.1747  0.7990    -1.7739
## methodIV                   0.1907    0.8223   0.2319  0.7700    -1.4587
## agglevelStates            -0.2008    1.0049  -0.1998  0.7990    -2.2164
##                            ci.ub
## intrcpt                  37.4245    *
## indepvar2N               -3.5029  ***
## year                      0.3167    *
## elecsys2Non-Majoritarian  2.5682    .
## methodPANEL               1.4896
## methodIV                  1.8401
## agglevelStates            1.8149
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

estimate	se	tval	pval	ci.lb	ci.ub	model
-296.9072	166.6870	-1.7812	0.017	-631.2389	37.4245	ExpPC - All coefs - Permutation
-5.4468	0.9692	-5.6201	0.001	-7.3907	-3.5029	ExpPC - All coefs - Permutation
0.1503	0.0830	1.8117	0.015	-0.0161	0.3167	ExpPC - All coefs - Permutation
1.0236	0.7701	1.3293	0.073	-0.5209	2.5682	ExpPC - All coefs - Permutation
-0.1422	0.8136	-0.1747	0.799	-1.7739	1.4896	ExpPC - All coefs - Permutation
0.1907	0.8223	0.2319	0.770	-1.4587	1.8401	ExpPC - All coefs - Permutation
-0.2008	1.0049	-0.1998	0.799	-2.2164	1.8149	ExpPC - All coefs - Permutation

With all coefficients, the results of the effect sizes on the Expenditure Per Capita Regressions are the following:

1. Compared with `K`, models with `N` tend to detect significantly smaller effects.
2. Year has now a positive effect on coefficient sizes.
3. Passing the electoral rules from `Majoritarian` to `Non-Majoritarian`, increases significantly the effects on per capita expenditure found in our models.
4. In terms of the modeling, passing from `OLS` to `PANEL` decreases the detected effects.
5. All other coeffients were not significant.

Meta-regressions for the Log of Expenditure Per Capita

estimate	se	tval	pval	ci.lb	ci.ub	model
8.9711	47.4747	0.1890	0.8811	-594.2521	612.1943	logExpPC
-0.1641	0.3258	-0.5037	0.7029	-4.3043	3.9760	logExpPC
-0.0044	0.0237	-0.1864	0.8827	-0.3053	0.2965	logExpPC
0.1520	0.1902	0.7993	0.5707	-2.2647	2.5687	logExpPC
0.2581	0.1886	1.3680	0.4018	-2.1389	2.6550	logExpPC
-0.0875	0.1901	-0.4602	0.7254	-2.5028	2.3278	logExpPC

```r
summary(mod)
```

```
##
## Mixed-Effects Model (k = 7; tau^2 estimator: REML)
##
##   logLik  deviance       AIC       BIC      AICc
##   0.8657   -1.7315   12.2685   -1.7315  124.2685
##
## tau^2 (estimated amount of residual heterogeneity):     0.0096 (SE = 0.0147)
## tau (square root of estimated tau^2 value):             0.0977
## I^2 (residual heterogeneity / unaccounted variability): 92.15%
## H^2 (unaccounted variability / sampling variability):   12.74
## R^2 (amount of heterogeneity accounted for):            65.22%
##
## Test for Residual Heterogeneity:
## QE(df = 1) = 12.7408, p-val = 0.0004
##
## Test of Moderators (coefficients 2:6):
## F(df1 = 5, df2 = 1) = 2.9742, p-val = 0.4128
##
## Model Results:
##
##                 estimate       se     tval    pval       ci.lb     ci.ub
## intrcpt           8.9711  47.4747   0.1890  0.8811  -594.2521  612.1943
```

```
## indepvar2N       -0.1641   0.3258  -0.5037  0.7029    -4.3043    3.9760
## year             -0.0044   0.0237  -0.1864  0.8827    -0.3053    0.2965
## publishedNo       0.1520   0.1902   0.7993  0.5707    -2.2647    2.5687
## methodPANEL       0.2581   0.1886   1.3680  0.4018    -2.1389    2.6550
## agglevelStates   -0.0875   0.1901  -0.4602  0.7254    -2.5028    2.3278
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

As we have considerable heterogeneity in our sample, we run a permutation test to ensure the validity of our estimates. The results follow below.

```
##
## Test of Moderators (coefficients 2:6):
## F(df1 = 5, df2 = 1) = 2.9742, p-val* = 0.3720
##
## Model Results:
##
##                 estimate       se     tval   pval*      ci.lb     ci.ub
## intrcpt           8.9711  47.4747   0.1890  0.9090  -594.2521  612.1943
## indepvar2N       -0.1641   0.3258  -0.5037  0.7160    -4.3043    3.9760
## year             -0.0044   0.0237  -0.1864  0.9110    -0.3053    0.2965
## publishedNo       0.1520   0.1902   0.7993  0.5880    -2.2647    2.5687
## methodPANEL       0.2581   0.1886   1.3680  0.3660    -2.1389    2.6550
## agglevelStates   -0.0875   0.1901  -0.4602  0.6980    -2.5028    2.3278
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

estimate	se	tval	pval	ci.lb	ci.ub	model
8.9711	47.4747	0.1890	0.909	-594.2521	612.1943	logExpPC - Permutation
-0.1641	0.3258	-0.5037	0.716	-4.3043	3.9760	logExpPC - Permutation
-0.0044	0.0237	-0.1864	0.911	-0.3053	0.2965	logExpPC - Permutation
0.1520	0.1902	0.7993	0.588	-2.2647	2.5687	logExpPC - Permutation
0.2581	0.1886	1.3680	0.366	-2.1389	2.6550	logExpPC - Permutation
-0.0875	0.1901	-0.4602	0.698	-2.5028	2.3278	logExpPC - Permutation

We have the following results for the meta-regressions of Log of Expenditure Per Capita:

1. Unpublished papers report a significantly higher coefficient.
2. In terms of the modeling, passing from `OLS` to `PANEL` increases the detected effects.
3. All other coefficients remained insignificant.

Below we also run the meta-regressions adding all coefficients in the papers. The results follow below:

estimate	se	tval	pval	ci.lb	ci.ub	model
-1.6655	15.8337	-0.1052	0.9173	-34.6940	31.3630	logExpPC - All coefs
0.0088	0.1262	0.0701	0.9448	-0.2544	0.2721	logExpPC - All coefs
0.0009	0.0079	0.1187	0.9067	-0.0155	0.0174	logExpPC - All coefs
0.0829	0.0728	1.1387	0.2683	-0.0689	0.2347	logExpPC - All coefs
-0.2436	0.0705	-3.4537	0.0025	-0.3908	-0.0965	logExpPC - All coefs
-0.2978	0.0656	-4.5398	0.0002	-0.4347	-0.1610	logExpPC - All coefs
-0.0438	0.0673	-0.6505	0.5228	-0.1842	0.0966	logExpPC - All coefs

```r
summary(mod)
```

```
##
## Mixed-Effects Model (k = 27; tau^2 estimator: REML)
##
##   logLik  deviance       AIC       BIC      AICc
##  21.9924  -43.9848  -27.9848  -20.0190  -14.8939
##
## tau^2 (estimated amount of residual heterogeneity):     0.0051 (SE = 0.0021)
## tau (square root of estimated tau^2 value):             0.0716
## I^2 (residual heterogeneity / unaccounted variability): 86.93%
## H^2 (unaccounted variability / sampling variability):   7.65
## R^2 (amount of heterogeneity accounted for):            82.37%
##
## Test for Residual Heterogeneity:
## QE(df = 20) = 98.5701, p-val < .0001
##
## Test of Moderators (coefficients 2:7):
## F(df1 = 6, df2 = 20) = 16.9707, p-val < .0001
##
## Model Results:
##
##                 estimate       se     tval    pval     ci.lb    ci.ub
## intrcpt          -1.6655  15.8337  -0.1052  0.9173  -34.6940  31.3630
## indepvar2N        0.0088   0.1262   0.0701  0.9448   -0.2544   0.2721
## year              0.0009   0.0079   0.1187  0.9067   -0.0155   0.0174
## publishedNo       0.0829   0.0728   1.1387  0.2683   -0.0689   0.2347
## methodPANEL      -0.2436   0.0705  -3.4537  0.0025   -0.3908  -0.0965   **
## methodRDD        -0.2978   0.0656  -4.5398  0.0002   -0.4347  -0.1610  ***
## agglevelStates   -0.0438   0.0673  -0.6505  0.5228   -0.1842   0.0966
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Test of Moderators (coefficients 2:7):
## F(df1 = 6, df2 = 20) = 16.9707, p-val* = 0.0010
##
## Model Results:
##
##                 estimate       se     tval   pval*     ci.lb    ci.ub
## intrcpt          -1.6655  15.8337  -0.1052  0.9130  -34.6940  31.3630
## indepvar2N        0.0088   0.1262   0.0701  0.9320   -0.2544   0.2721
## year              0.0009   0.0079   0.1187  0.9010   -0.0155   0.0174
## publishedNo       0.0829   0.0728   1.1387  0.3040   -0.0689   0.2347
## methodPANEL      -0.2436   0.0705  -3.4537  0.0030   -0.3908  -0.0965   **
## methodRDD        -0.2978   0.0656  -4.5398  0.0010   -0.4347  -0.1610  ***
## agglevelStates   -0.0438   0.0673  -0.6505  0.5100   -0.1842   0.0966
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

estimate	se	tval	pval	ci.lb	ci.ub	model
-1.6655	15.8337	-0.1052	0.913	-34.6940	31.3630	logExpPC - All coefs - Permutation
0.0088	0.1262	0.0701	0.932	-0.2544	0.2721	logExpPC - All coefs - Permutation
0.0009	0.0079	0.1187	0.901	-0.0155	0.0174	logExpPC - All coefs - Permutation
0.0829	0.0728	1.1387	0.304	-0.0689	0.2347	logExpPC - All coefs - Permutation
-0.2436	0.0705	-3.4537	0.003	-0.3908	-0.0965	logExpPC - All coefs - Permutation
-0.2978	0.0656	-4.5398	0.001	-0.4347	-0.1610	logExpPC - All coefs - Permutation
-0.0438	0.0673	-0.6505	0.510	-0.1842	0.0966	logExpPC - All coefs - Permutation

With all coefficients, the results of the effect sizes on the Log of Expenditure Per Capita Regressions are the following:

1. In terms of the modeling, passing from `OLS` to `PANEL` or `RDD` decreases the detected effects.
2. All other coefficients remained insignificant.

Summary of Models

Summary of Base Models

```r
aux = bind_rows(
  mod1,
  mod3,
  mod5
) %>%
  mutate(model = gsub(" .*", "", model))

kable(aux) %>%
  kable_styling(position = "center")
```

estimate	se	tval	pval	ci.lb	ci.ub	model
7.3697	1.7616	4.1835	0.0527	-0.2099	14.9493	PCTGDP
-0.0094	0.0030	-3.1174	0.0893	-0.0223	0.0036	PCTGDP
-4.7067	1.4637	-3.2156	0.0846	-11.0045	1.5912	PCTGDP
-0.0003	0.0005	-0.6899	0.5615	-0.0024	0.0017	PCTGDP
0.0633	0.0078	8.1139	0.0149	0.0297	0.0969	PCTGDP
-2.0554	0.1611	-12.7621	0.0061	-2.7484	-1.3625	PCTGDP
0.0556	0.0071	7.7913	0.0161	0.0249	0.0864	PCTGDP
-4.6992	1.4637	-3.2106	0.0848	-10.9969	1.5984	PCTGDP
-4.6959	1.4637	-3.2082	0.0850	-10.9937	1.6019	PCTGDP
-104.0701	318.9300	-0.3263	0.7503	-806.0302	597.8900	ExpPC
-2.9238	2.0932	-1.3968	0.1900	-7.5309	1.6834	ExpPC
0.0525	0.1586	0.3308	0.7470	-0.2967	0.4017	ExpPC
0.3458	1.5533	0.2226	0.8279	-3.0730	3.7645	ExpPC
1.4571	2.2376	0.6512	0.5283	-3.4679	6.3821	ExpPC
1.4936	2.6675	0.5599	0.5868	-4.3776	7.3648	ExpPC
-0.0915	2.4255	-0.0377	0.9706	-5.4299	5.2470	ExpPC
8.9711	47.4747	0.1890	0.8811	-594.2521	612.1943	logExpPC
-0.1641	0.3258	-0.5037	0.7029	-4.3043	3.9760	logExpPC
-0.0044	0.0237	-0.1864	0.8827	-0.3053	0.2965	logExpPC
0.1520	0.1902	0.7993	0.5707	-2.2647	2.5687	logExpPC
0.2581	0.1886	1.3680	0.4018	-2.1389	2.6550	logExpPC
-0.0875	0.1901	-0.4602	0.7254	-2.5028	2.3278	logExpPC

Summary of Base Models (Permutation)

estimate	se	tval	pval	ci.lb	ci.ub	model
7.3697	1.7616	4.1835	0.036	-0.2099	14.9493	PCTGDP
-0.0094	0.0030	-3.1174	0.019	-0.0223	0.0036	PCTGDP
-4.7067	1.4637	-3.2156	0.201	-11.0045	1.5912	PCTGDP
-0.0003	0.0005	-0.6899	0.435	-0.0024	0.0017	PCTGDP
0.0633	0.0078	8.1139	0.014	0.0297	0.0969	PCTGDP
-2.0554	0.1611	-12.7621	0.009	-2.7484	-1.3625	PCTGDP
0.0556	0.0071	7.7913	0.014	0.0249	0.0864	PCTGDP
-4.6992	1.4637	-3.2106	0.217	-10.9969	1.5984	PCTGDP
-4.6959	1.4637	-3.2082	0.279	-10.9937	1.6019	PCTGDP
-104.0701	318.9300	-0.3263	0.630	-806.0302	597.8900	ExpPC
-2.9238	2.0932	-1.3968	0.065	-7.5309	1.6834	ExpPC
0.0525	0.1586	0.3308	0.627	-0.2967	0.4017	ExpPC
0.3458	1.5533	0.2226	0.718	-3.0730	3.7645	ExpPC
1.4571	2.2376	0.6512	0.333	-3.4679	6.3821	ExpPC
1.4936	2.6675	0.5599	0.438	-4.3776	7.3648	ExpPC
-0.0915	2.4255	-0.0377	0.944	-5.4299	5.2470	ExpPC
8.9711	47.4747	0.1890	0.909	-594.2521	612.1943	logExpPC
-0.1641	0.3258	-0.5037	0.716	-4.3043	3.9760	logExpPC
-0.0044	0.0237	-0.1864	0.911	-0.3053	0.2965	logExpPC
0.1520	0.1902	0.7993	0.588	-2.2647	2.5687	logExpPC
0.2581	0.1886	1.3680	0.366	-2.1389	2.6550	logExpPC
-0.0875	0.1901	-0.4602	0.698	-2.5028	2.3278	logExpPC

Summary of Models with all coefficients

estimate	se	tval	pval	ci.lb	ci.ub	model
-5.3830	5.8900	-0.9139	0.3676	-17.3805	6.6145	PCTGDP
-0.0014	0.0048	-0.2945	0.7703	-0.0112	0.0084	PCTGDP
-4.6069	2.4363	-1.8909	0.0677	-9.5696	0.3558	PCTGDP
0.0060	0.0027	2.2730	0.0299	0.0006	0.0114	PCTGDP
0.1130	0.0251	4.5060	0.0001	0.0619	0.1641	PCTGDP
-2.1629	0.1568	-13.7904	0.0000	-2.4823	-1.8434	PCTGDP
0.1252	0.0304	4.1232	0.0002	0.0633	0.1870	PCTGDP
-4.7325	2.4361	-1.9426	0.0609	-9.6947	0.2298	PCTGDP
-4.6443	2.4362	-1.9064	0.0656	-9.6067	0.3181	PCTGDP
-296.9072	166.6870	-1.7812	0.0806	-631.2389	37.4245	ExpPC
-5.4468	0.9692	-5.6201	0.0000	-7.3907	-3.5029	ExpPC
0.1503	0.0830	1.8117	0.0757	-0.0161	0.3167	ExpPC
1.0236	0.7701	1.3293	0.1894	-0.5209	2.5682	ExpPC
-0.1422	0.8136	-0.1747	0.8620	-1.7739	1.4896	ExpPC
0.1907	0.8223	0.2319	0.8175	-1.4587	1.8401	ExpPC
-0.2008	1.0049	-0.1998	0.8424	-2.2164	1.8149	ExpPC
-1.6655	15.8337	-0.1052	0.9173	-34.6940	31.3630	logExpPC
0.0088	0.1262	0.0701	0.9448	-0.2544	0.2721	logExpPC
0.0009	0.0079	0.1187	0.9067	-0.0155	0.0174	logExpPC
0.0829	0.0728	1.1387	0.2683	-0.0689	0.2347	logExpPC
-0.2436	0.0705	-3.4537	0.0025	-0.3908	-0.0965	logExpPC
-0.2978	0.0656	-4.5398	0.0002	-0.4347	-0.1610	logExpPC
-0.0438	0.0673	-0.6505	0.5228	-0.1842	0.0966	logExpPC

Summary of Models with all coefficients (Permutation)

estimate	se	tval	pval	ci.lb	ci.ub	model
-5.3830	5.8900	-0.9139	0.280	-17.3805	6.6145	PCTGDP
-0.0014	0.0048	-0.2945	0.739	-0.0112	0.0084	PCTGDP
-4.6069	2.4363	-1.8909	0.091	-9.5696	0.3558	PCTGDP
0.0060	0.0027	2.2730	0.009	0.0006	0.0114	PCTGDP
0.1130	0.0251	4.5060	0.002	0.0619	0.1641	PCTGDP
-2.1629	0.1568	-13.7904	0.001	-2.4823	-1.8434	PCTGDP
0.1252	0.0304	4.1232	0.002	0.0633	0.1870	PCTGDP
-4.7325	2.4361	-1.9426	0.084	-9.6947	0.2298	PCTGDP
-4.6443	2.4362	-1.9064	0.095	-9.6067	0.3181	PCTGDP
-296.9072	166.6870	-1.7812	0.017	-631.2389	37.4245	ExpPC
-5.4468	0.9692	-5.6201	0.001	-7.3907	-3.5029	ExpPC
0.1503	0.0830	1.8117	0.015	-0.0161	0.3167	ExpPC
1.0236	0.7701	1.3293	0.073	-0.5209	2.5682	ExpPC
-0.1422	0.8136	-0.1747	0.799	-1.7739	1.4896	ExpPC
0.1907	0.8223	0.2319	0.770	-1.4587	1.8401	ExpPC
-0.2008	1.0049	-0.1998	0.799	-2.2164	1.8149	ExpPC
-1.6655	15.8337	-0.1052	0.913	-34.6940	31.3630	logExpPC
0.0088	0.1262	0.0701	0.932	-0.2544	0.2721	logExpPC
0.0009	0.0079	0.1187	0.901	-0.0155	0.0174	logExpPC
0.0829	0.0728	1.1387	0.304	-0.0689	0.2347	logExpPC
-0.2436	0.0705	-3.4537	0.003	-0.3908	-0.0965	logExpPC
-0.2978	0.0656	-4.5398	0.001	-0.4347	-0.1610	logExpPC
-0.0438	0.0673	-0.6505	0.510	-0.1842	0.0966	logExpPC

Theory of Meta Analysis

There are two main estimators for conducting meta analysis: fixed effects and random effects models. The fixed effects model assumes that there is one true effect in reality, and that all estimates are an attempt to uncover this true effect. The random effects model, on the other hand, assumes that there are a distribution of true effects, that vary based on sample and tests characteristics.

In this paper, we use the random effects model. The empirical papers testing the law of 1/n are very diverse. We tried to capture some of this diversity by considering the main dependent and independent variables separately, but they have at least three other important sources of dispersion:

1. **Subjects**: Counties, Municipalities, States, Provinces, Countries.
2. **Electoral systems**: Majoritarian, PR, Mixed.
3. **Modeling strategies**: Panel data, Standard OLS, IV, RDD.

These sources of heterogeneity have two implications. First, it makes our estimates very disperse. The heterogeneity tests are all but one significant. When the sample sizes are large enough, we removed more heterogeneous studies, but we still had considerable dispersion in our estimates. Second, the amount of heterogeneity makes fixed effects estimates unrealistic and bised. Thus, we opt for random effects model.

Let each study having an effect of T_i. In a random effects model, we can decompose this effect in two components, the true effect that the study with the same specifications as i come from, θ_i, and a within-study error ε_i:

$$T_i \ = \ \theta_i + \varepsilon_i$$

And the random effects model assumes that the θ_i varies from study to study, having a true parameter μ, plus a between-study error, ξ_i:

$$T_i \;=\; \mu + \xi_i + \varepsilon_i$$

And the random effects model estimates the parameter μ, under the challenge of estimating both the within-and-between-study sampling errors.

In all empirical estimates, we use the package `meta`, and the package `dmetar`, described in (Doing Meta-Analysis with R)[https://bookdown.org/MathiasHarrer/Doing_Meta_Analysis_in_R/random.html]. To empirically implement the random effects model, we need to choose a method to estimate the true effect size variance, τ^2, which in our formulation, represents the variance of ξ_i. We selected the **Restricted Maximum Likelihood Estimator**, as the literature regards it as more precise when we have continuous measures, such as we have on our data (link)[https://www.ncbi.nlm.nih.gov/pubmed/26332144].

Robustness: Full model meta-regressions combined

In this section, we aggregate all the coefficients and run a multivariate meta-regression, controlling by:

1. The type of the dependent variable in the study (expenditure per capita, log of the expenditure per capita, and share of government expenditure in the GDP)
2. The type of the independent variable in the stydy (N, K, log of N);
3. The electoral system (Majoritarian, Proportional Representation, and Mixed).

The results follow below, and show null effect for all variables, including the intercept.

estimate	se	tval	pval	ci.lb	ci.ub	model
-22.4725	122.8858	-0.1829	0.8566	-277.3220	232.3770	logExpPC - All coefs - Permutation
0.1796	0.8381	0.2143	0.8323	-1.5585	1.9176	logExpPC - All coefs - Permutation
-0.5979	0.8526	-0.7012	0.4905	-2.3661	1.1704	logExpPC - All coefs - Permutation
-0.4922	0.5236	-0.9400	0.3574	-1.5780	0.5937	logExpPC - All coefs - Permutation
0.4376	1.6148	0.2710	0.7889	-2.9113	3.7865	logExpPC - All coefs - Permutation
0.0114	0.0609	0.1875	0.8530	-0.1148	0.1376	logExpPC - All coefs - Permutation
0.2843	0.6541	0.4346	0.6681	-1.0723	1.6408	logExpPC - All coefs - Permutation
0.2724	0.6284	0.4335	0.6689	-1.0308	1.5755	logExpPC - All coefs - Permutation
0.1754	0.7126	0.2461	0.8079	-1.3025	1.6532	logExpPC - All coefs - Permutation
0.0336	1.0078	0.0334	0.9737	-2.0565	2.1237	logExpPC - All coefs - Permutation
0.2411	1.2612	0.1912	0.8501	-2.3745	2.8567	logExpPC - All coefs - Permutation
-0.2400	0.7393	-0.3247	0.7485	-1.7733	1.2932	logExpPC - All coefs - Permutation
-1.4929	1.2027	-1.2414	0.2275	-3.9871	1.0013	logExpPC - All coefs - Permutation
0.7437	1.5559	0.4780	0.6374	-2.4830	3.9704	logExpPC - All coefs - Permutation

```r
summary(mod)
```

```
##
## Mixed-Effects Model (k = 36; tau^2 estimator: REML)
##
##   logLik  deviance       AIC       BIC      AICc
## -47.9845   95.9689  125.9689  142.3345  205.9689
##
## tau^2 (estimated amount of residual heterogeneity):     0.2315 (SE = 0.1007)
## tau (square root of estimated tau^2 value):             0.4812
## I^2 (residual heterogeneity / unaccounted variability): 99.94%
## H^2 (unaccounted variability / sampling variability):   1599.58
## R^2 (amount of heterogeneity accounted for):            0.00%
##
## Test for Residual Heterogeneity:
```

```
## QE(df = 22) = 175.9758, p-val < .0001
##
## Test of Moderators (coefficients 2:14):
## F(df1 = 13, df2 = 22) = 0.3352, p-val = 0.9772
##
## Model Results:
##
##                          estimate        se     tval    pval      ci.lb
## intrcpt                  -22.4725  122.8858  -0.1829  0.8566  -277.3220
## depvar2PCTGDP              0.1796    0.8381   0.2143  0.8323    -1.5585
## depvar2logExpPC           -0.5979    0.8526  -0.7012  0.4905    -2.3661
## indepvar2N                -0.4922    0.5236  -0.9400  0.3574    -1.5780
## indepvar2logN              0.4376    1.6148   0.2710  0.7889    -2.9113
## year                       0.0114    0.0609   0.1875  0.8530    -0.1148
## publishedNo                0.2843    0.6541   0.4346  0.6681    -1.0723
## elecsys2Non-Majoritarian   0.2724    0.6284   0.4335  0.6689    -1.0308
## methodPANEL                0.1754    0.7126   0.2461  0.8079    -1.3025
## methodIV                   0.0336    1.0078   0.0334  0.9737    -2.0565
## methodRDD                  0.2411    1.2612   0.1912  0.8501    -2.3745
## agglevelStates            -0.2400    0.7393  -0.3247  0.7485    -1.7733
## agglevelCountries         -1.4929    1.2027  -1.2414  0.2275    -3.9871
## location2World             0.7437    1.5559   0.4780  0.6374    -2.4830
##                             ci.ub
## intrcpt                  232.3770
## depvar2PCTGDP              1.9176
## depvar2logExpPC            1.1704
## indepvar2N                 0.5937
## indepvar2logN              3.7865
## year                       0.1376
## publishedNo                1.6408
## elecsys2Non-Majoritarian   1.5755
## methodPANEL                1.6532
## methodIV                   2.1237
## methodRDD                  2.8567
## agglevelStates             1.2932
## agglevelCountries          1.0013
## location2World             3.9704
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

As we have considerable heterogeneity in our sample, we run a permutation test to ensure the validity of our estimates. The results follow below.

estimate	se	tval	pval	ci.lb	ci.ub	model
-22.4725	122.8858	-0.1829	0.789	-277.3220	232.3770	logExpPC - All coefs - Permutation
0.1796	0.8381	0.2143	0.717	-1.5585	1.9176	logExpPC - All coefs - Permutation
-0.5979	0.8526	-0.7012	0.332	-2.3661	1.1704	logExpPC - All coefs - Permutation
-0.4922	0.5236	-0.9400	0.157	-1.5780	0.5937	logExpPC - All coefs - Permutation
0.4376	1.6148	0.2710	0.718	-2.9113	3.7865	logExpPC - All coefs - Permutation
0.0114	0.0609	0.1875	0.776	-0.1148	0.1376	logExpPC - All coefs - Permutation
0.2843	0.6541	0.4346	0.510	-1.0723	1.6408	logExpPC - All coefs - Permutation
0.2724	0.6284	0.4335	0.489	-1.0308	1.5755	logExpPC - All coefs - Permutation
0.1754	0.7126	0.2461	0.702	-1.3025	1.6532	logExpPC - All coefs - Permutation
0.0336	1.0078	0.0334	0.963	-2.0565	2.1237	logExpPC - All coefs - Permutation
0.2411	1.2612	0.1912	0.787	-2.3745	2.8567	logExpPC - All coefs - Permutation
-0.2400	0.7393	-0.3247	0.611	-1.7733	1.2932	logExpPC - All coefs - Permutation
-1.4929	1.2027	-1.2414	0.247	-3.9871	1.0013	logExpPC - All coefs - Permutation
0.7437	1.5559	0.4780	0.573	-2.4830	3.9704	logExpPC - All coefs - Permutation

In the main text, we selected the coefficients based on the regressions that had most observations and that presented a full model (with fixed effects or intermediate bandwidth in RDD). Below we also run the meta-regressions adding all coefficients in the papers. The results follow below:

estimate	se	tval	pval	ci.lb	ci.ub	model
38.5855	36.3705	1.0609	0.2910	-33.4642	110.6352	logExpPC - All coefs - Permutation
0.4967	0.3068	1.6189	0.1082	-0.1111	1.1044	logExpPC - All coefs - Permutation
-0.3311	0.2342	-1.4139	0.1601	-0.7949	0.1328	logExpPC - All coefs - Permutation
-0.1467	0.1451	-1.0113	0.3140	-0.4342	0.1407	logExpPC - All coefs - Permutation
0.1689	0.4677	0.3611	0.7187	-0.7576	1.0954	logExpPC - All coefs - Permutation
-0.0190	0.0180	-1.0533	0.2944	-0.0547	0.0167	logExpPC - All coefs - Permutation
-0.0690	0.1689	-0.4088	0.6834	-0.4036	0.2655	logExpPC - All coefs - Permutation
0.6244	0.2274	2.7464	0.0070	0.1740	1.0748	logExpPC - All coefs - Permutation
-0.1833	0.1588	-1.1546	0.2507	-0.4978	0.1312	logExpPC - All coefs - Permutation
-0.1452	0.2364	-0.6139	0.5405	-0.6135	0.3232	logExpPC - All coefs - Permutation
-0.2569	0.2618	-0.9812	0.3286	-0.7756	0.2618	logExpPC - All coefs - Permutation
-0.5263	0.2324	-2.2648	0.0254	-0.9867	-0.0659	logExpPC - All coefs - Permutation
-1.8292	0.4527	-4.0406	0.0001	-2.7261	-0.9324	logExpPC - All coefs - Permutation
0.4062	0.4891	0.8305	0.4080	-0.5627	1.3751	logExpPC - All coefs - Permutation

```
summary(mod)
```

```
##
## Mixed-Effects Model (k = 128; tau^2 estimator: REML)
##
##    logLik   deviance        AIC        BIC       AICc
## -192.2430   384.4860   414.4860   455.5290   419.3840
##
## tau^2 (estimated amount of residual heterogeneity):     0.0624 (SE = 0.0108)
## tau (square root of estimated tau^2 value):             0.2498
## I^2 (residual heterogeneity / unaccounted variability): 99.96%
## H^2 (unaccounted variability / sampling variability):   2838.73
## R^2 (amount of heterogeneity accounted for):            66.57%
##
## Test for Residual Heterogeneity:
## QE(df = 114) = 2083.6861, p-val < .0001
```

```
##
## Test of Moderators (coefficients 2:14):
## F(df1 = 13, df2 = 114) = 2.7571, p-val = 0.0019
##
## Model Results:
##
##                          estimate       se     tval    pval     ci.lb
## intrcpt                   38.5855  36.3705   1.0609  0.2910  -33.4642
## depvar2PCTGDP              0.4967   0.3068   1.6189  0.1082   -0.1111
## depvar2logExpPC           -0.3311   0.2342  -1.4139  0.1601   -0.7949
## indepvar2N                -0.1467   0.1451  -1.0113  0.3140   -0.4342
## indepvar2logN              0.1689   0.4677   0.3611  0.7187   -0.7576
## year                      -0.0190   0.0180  -1.0533  0.2944   -0.0547
## publishedNo               -0.0690   0.1689  -0.4088  0.6834   -0.4036
## elecsys2Non-Majoritarian   0.6244   0.2274   2.7464  0.0070    0.1740
## methodPANEL               -0.1833   0.1588  -1.1546  0.2507   -0.4978
## methodIV                  -0.1452   0.2364  -0.6139  0.5405   -0.6135
## methodRDD                 -0.2569   0.2618  -0.9812  0.3286   -0.7756
## agglevelStates            -0.5263   0.2324  -2.2648  0.0254   -0.9867
## agglevelCountries         -1.8292   0.4527  -4.0406  <.0001   -2.7261
## location2World             0.4062   0.4891   0.8305  0.4080   -0.5627
##                             ci.ub
## intrcpt                  110.6352
## depvar2PCTGDP              1.1044
## depvar2logExpPC            0.1328
## indepvar2N                 0.1407
## indepvar2logN              1.0954
## year                       0.0167
## publishedNo                0.2655
## elecsys2Non-Majoritarian   1.0748   **
## methodPANEL                0.1312
## methodIV                   0.3232
## methodRDD                  0.2618
## agglevelStates            -0.0659    *
## agglevelCountries         -0.9324  ***
## location2World             1.3751
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

estimate	se	tval	pval	ci.lb	ci.ub	model
38.5855	36.3705	1.0609	0.111	-33.4642	110.6352	logExpPC - All coefs - Permutation
0.4967	0.3068	1.6189	0.020	-0.1111	1.1044	logExpPC - All coefs - Permutation
-0.3311	0.2342	-1.4139	0.040	-0.7949	0.1328	logExpPC - All coefs - Permutation
-0.1467	0.1451	-1.0113	0.117	-0.4342	0.1407	logExpPC - All coefs - Permutation
0.1689	0.4677	0.3611	0.611	-0.7576	1.0954	logExpPC - All coefs - Permutation
-0.0190	0.0180	-1.0533	0.112	-0.0547	0.0167	logExpPC - All coefs - Permutation
-0.0690	0.1689	-0.4088	0.540	-0.4036	0.2655	logExpPC - All coefs - Permutation
0.6244	0.2274	2.7464	0.001	0.1740	1.0748	logExpPC - All coefs - Permutation
-0.1833	0.1588	-1.1546	0.102	-0.4978	0.1312	logExpPC - All coefs - Permutation
-0.1452	0.2364	-0.6139	0.344	-0.6135	0.3232	logExpPC - All coefs - Permutation
-0.2569	0.2618	-0.9812	0.144	-0.7756	0.2618	logExpPC - All coefs - Permutation
-0.5263	0.2324	-2.2648	0.004	-0.9867	-0.0659	logExpPC - All coefs - Permutation
-1.8292	0.4527	-4.0406	0.001	-2.7261	-0.9324	logExpPC - All coefs - Permutation
0.4062	0.4891	0.8305	0.249	-0.5627	1.3751	logExpPC - All coefs - Permutation