

Positive Returns

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Summary of data

Country	Country.Code	MARKET.TYPE	REGION
Argentina: 1	ARG : 1	Developed :24	European :18
Australia: 1	AUS : 1	Developing:19	Eastern Europe: 5
Austria : 1	AUT : 1		Asia : 4
Belgium : 1	BEL : 1		Middle East : 4
Brazil : 1	BRA : 1		South Asia : 4
Canada : 1	CAN : 1		South America : 3
(Other) :37	(Other):37		(Other) : 5
TOT.EPI...2004	TOT.EPI...2005	TOT.EPI...2006	TOT.EPI...2007
Min. :29.87	Min. :29.87	Min. :29.97	Min. :29.99
1st Qu.:54.97	1st Qu.:55.30	1st Qu.:55.35	1st Qu.:55.07
Median :68.30	Median :68.41	Median :68.31	Median :68.46
Mean :64.84	Mean :65.07	Mean :65.27	Mean :65.50
3rd Qu.:74.78	3rd Qu.:75.28	3rd Qu.:75.44	3rd Qu.:75.86
Max. :86.64	Max. :86.43	Max. :85.95	Max. :86.69
TOT.EPI...2008	TOT...EPI.2009	TOT.EPI...2010	TOT.EPI...2011
Min. :31.37	Min. :30.69	Min. :31.03	Min. :31.18
1st Qu.:55.52	1st Qu.:55.86	1st Qu.:56.49	1st Qu.:56.49
Median :69.88	Median :70.18	Median :70.39	Median :69.74
Mean :66.20	Mean :66.37	Mean :66.58	Mean :66.46
3rd Qu.:76.46	3rd Qu.:76.78	3rd Qu.:76.84	3rd Qu.:76.59
Max. :88.36	Max. :88.79	Max. :88.60	Max. :88.17
TOT.EPI...2012	TOT.WGI...2004	TOT.WGI...2005	TOT.WGI...2006
Min. :26.71	Min. :26.09	Min. :28.03	Min. :31.60
1st Qu.:47.40	1st Qu.:52.04	1st Qu.:50.55	1st Qu.:49.01
Median :55.82	Median :78.42	Median :78.68	Median :77.17
Mean :56.30	Mean :71.49	Mean :71.57	Mean :71.48
3rd Qu.:72.71	3rd Qu.:91.53	3rd Qu.:91.47	3rd Qu.:92.44
Max. :80.47	Max. :99.60	Max. :99.68	Max. :98.62
TOT.WGI...2007	TOT.WGI...2008	TOT.WGI...2009	TOT.WGI...2010
Min. :34.84	Min. :34.63	Min. :29.57	Min. :32.22
1st Qu.:48.07	1st Qu.:47.76	1st Qu.:48.46	1st Qu.:48.48
Median :76.26	Median :76.18	Median :74.24	Median :74.86
Mean :71.71	Mean :71.55	Mean :70.81	Mean :70.87
3rd Qu.:92.53	3rd Qu.:92.98	3rd Qu.:91.86	3rd Qu.:90.45
Max. :97.58	Max. :97.83	Max. :98.42	Max. :98.11
TOT.WGI...2011	TOT.WGI...2012	EPI.RET...2005	EPI.RET...2006
Min. :28.65	Min. :27.87	Min. : -0.017000	Min. : -0.016400
1st Qu.:48.92	1st Qu.:49.38	1st Qu.: 0.000350	1st Qu.: -0.000050
Median :76.95	Median :75.71	Median : 0.002500	Median : 0.002500
Mean :71.00	Mean :70.67	Mean : 0.003716	Mean : 0.003107

3rd Qu.:90.47	3rd Qu.:90.56	3rd Qu.: 0.006400	3rd Qu.: 0.006500
Max. :98.66	Max. :98.34	Max. : 0.023600	Max. : 0.017100

EPI.RET...2007	EPI.RET...2008	EPI.RET...2009
Min. :-0.029200	Min. :-0.01840	Min. :-0.023400
1st Qu.: -0.000500	1st Qu.: 0.00280	1st Qu.: 0.000800
Median : 0.002400	Median : 0.00890	Median : 0.002900
Mean : 0.003477	Mean : 0.01182	Mean : 0.001986
3rd Qu.: 0.005600	3rd Qu.: 0.01920	3rd Qu.: 0.004650
Max. : 0.044500	Max. : 0.04600	Max. : 0.018900

EPI.RET...2010	EPI.RET...2011	EPI.RET...2012
Min. :-0.002700	Min. :-0.01350	Min. :-0.65770
1st Qu.: 0.000950	1st Qu.: -0.00450	1st Qu.: -0.33140
Median : 0.002300	Median : 0.00020	Median : -0.09010
Mean : 0.003491	Mean : -0.00156	Mean : -0.12451
3rd Qu.: 0.006400	3rd Qu.: 0.00160	3rd Qu.: -0.01115
Max. : 0.015700	Max. : 0.00590	Max. : 1.58080

WGI.RET...2005	WGI.RET...2006	WGI.RET...2007
Min. :-0.053200	Min. :-0.14440	Min. :-0.037500
1st Qu.: -0.018950	1st Qu.: -0.01160	1st Qu.: -0.006650
Median : -0.000800	Median : 0.00260	Median : -0.000800
Mean : 0.008463	Mean : -0.00294	Mean : 0.006867
3rd Qu.: 0.018700	3rd Qu.: 0.01730	3rd Qu.: 0.010000
Max. : 0.155800	Max. : 0.12740	Max. : 0.118700

WGI.RET...2008	WGI.RET...2009	WGI.RET...2010
Min. :-0.061800	Min. :-0.14610	Min. :-0.092500
1st Qu.: -0.014650	1st Qu.: -0.02950	1st Qu.: -0.009850
Median : -0.005600	Median : -0.01090	Median : 0.001100
Mean : -0.002112	Mean : -0.01174	Mean : 0.002165
3rd Qu.: 0.013000	3rd Qu.: 0.00680	3rd Qu.: 0.008900
Max. : 0.038000	Max. : 0.06150	Max. : 0.089600

WGI.RET...2011	WGI.RET...2012
Min. :-0.1755000	Min. :-0.074900
1st Qu.: -0.0041500	1st Qu.: -0.024900
Median : 0.0057000	Median : -0.001000
Mean : -0.0004605	Mean : -0.003442
3rd Qu.: 0.0177000	3rd Qu.: 0.007350
Max. : 0.0921000	Max. : 0.128800

Next, I would like to extract the latest values for EPI and WGI combine those scores with an equal weight and then compare those scores vs. the corresponding year notional GDP of each state and then the corresponding year market value of each state.

Extracting 2012 EPI data for each country

	Country	TOT.EPI...2012
1	Argentina	28.69
2	Australia	48.89
3	Austria	49.55
4	Belgium	51.83

5	Brazil	52.04
6	Canada	66.49
7	China	36.69
8	Colombia	73.13
9	Croatia	69.93
10	Cyprus	50.78
11	Czech Republic	31.39
12	Denmark	76.14
13	Egypt	66.23
14	Finland	58.55
15	France	61.11
16	Germany	74.66
17	Greece	72.29
18	Hungary	29.30
19	Iceland	47.23
20	India	80.47
21	Indonesia	32.07
22	Ireland	74.18
23	Israel	35.24
24	Italy	73.76
25	Japan	48.06
26	Korea, Republic of	62.06
27	Mauritius	36.99
28	Mexico	55.82
29	Netherlands	75.88
30	New Zealand	61.26
31	Norway	26.71
32	Philippines	27.18
33	Saudi Arabia	44.67
34	Slovenia	75.32
35	South Africa	62.06
36	Spain	76.41
37	Sweden	77.66
38	Switzerland	70.60
39	Thailand	51.96
40	Turkey	53.03
41	Ukraine	47.56
42	United Kingdom	76.39
43	United States	50.52

Extracting 2012 WGI data for each country

	Country	TOT.WGI...2012
1	Argentina	39.66
2	Australia	93.11
3	Austria	93.56
4	Belgium	87.87
5	Brazil	53.57
6	Canada	93.97
7	China	35.13
8	Colombia	43.23
9	Croatia	63.97
10	Cyprus	81.29
11	Czech Republic	76.97
12	Denmark	94.78

13	Egypt	27.87
14	Finland	98.34
15	France	83.98
16	Germany	89.30
17	Greece	58.50
18	Hungary	70.24
19	Iceland	91.02
20	India	39.84
21	Indonesia	38.10
22	Ireland	90.09
23	Israel	68.25
24	Italy	66.27
25	Japan	85.49
26	Korea, Republic of	72.09
27	Mauritius	75.71
28	Mexico	47.98
29	Netherlands	95.80
30	New Zealand	98.02
31	Norway	97.06
32	Philippines	40.35
33	Saudi Arabia	44.26
34	Slovenia	77.06
35	South Africa	57.95
36	Spain	74.71
37	Sweden	97.55
38	Switzerland	97.30
39	Thailand	44.34
40	Turkey	50.78
41	Ukraine	30.61
42	United Kingdom	87.41
43	United States	85.57

Creating an average score for each state

	State	Combined ESG Score
1	Argentina	34.175
2	Australia	71.000
3	Austria	71.555
4	Belgium	69.850
5	Brazil	52.805
6	Canada	80.230
7	China	35.910
8	Colombia	58.180
9	Croatia	66.950
10	Cyprus	66.035
11	Czech Republic	54.180
12	Denmark	85.460
13	Egypt	47.050
14	Finland	78.445
15	France	72.545
16	Germany	81.980
17	Greece	65.395
18	Hungary	49.770
19	Iceland	69.125
20	India	60.155

21	Indonesia	35.085
22	Ireland	82.135
23	Israel	51.745
24	Italy	70.015
25	Japan	66.775
26	Korea, Republic of	67.075
27	Mauritius	56.350
28	Mexico	51.900
29	Netherlands	85.840
30	New Zealand	79.640
31	Norway	61.885
32	Philippines	33.765
33	Saudi Arabia	44.465
34	Slovenia	76.190
35	South Africa	60.005
36	Spain	75.560
37	Sweden	87.605
38	Switzerland	83.950
39	Thailand	48.150
40	Turkey	51.905
41	Ukraine	39.085
42	United Kingdom	81.900
43	United States	68.045

I will now extract notional GDP for each state in 2012. Data is provided by the Quandl data platform using data from the World Bank World Development Indicators. GDP values are in bn.

```
[1] 609.5692
[1] 1574.801
[1] 407.373
[1] 497.78
[1] 2413.175
[1] 1832.716
[1] 8471.426
[1] 369.6597
[1] 56.48538
[1] 25.01485
[1] 206.4416
[1] 325.0122
[1] 260.1527
[1] 256.7065
[1] 2681.416
[1] 3539.615
[1] 245.6707
[1] 127.1762
[1] 14.19452
```

[1] 1869.21
 [1] 917.8699
 [1] 224.6507
 [1] 259.612
 [1] 2074.632
 [1] 5957.25
 [1] 1222.807
 [1] 11.44207
 [1] 1184.504
 [1] 828.9468
 [1] 176.6166
 [1] 509.7049
 [1] 250.2401
 [1] 733.9557
 [1] 46.23999
 [1] 397.3882
 [1] 1339.947
 [1] 543.8806
 [1] 665.4083
 [1] 397.4719
 [1] 788.8629
 [1] 182.5917
 [1] 2630.473
 [1] 16155.25

2012 GDP
 arg.gdp 609.57
 aus.gdp 1574.80
 aut.gdp 407.37
 bel.gdp 497.78
 bra.gdp 2413.17
 can.gdp 1832.72
 chn.gdp 8471.43
 col.gdp 369.66
 hrv.gdp 56.49
 cyp.gdp 25.01
 cze.gdp 206.44
 dnk.gdp 325.01
 egy.gdp 260.15
 fin.gdp 256.71
 fra.gdp 2681.42
 deu.gdp 3539.62
 grc.gdp 245.67

hun.gdp	127.18
isl.gdp	14.19
ind.gdp	1869.21
idn.gdp	917.87
irl.gdp	224.65
isr.gdp	259.61
ita.gdp	2074.63
jpn.gdp	5957.25
kor.gdp	1222.81
mus.gdp	11.44
mex.gdp	1184.50
nld.gdp	828.95
nzl.gdp	176.62
nor.gdp	509.70
phl.gdp	250.24
sau.gdp	733.96
svn.gdp	46.24
zaf.gdp	397.39
esp.gdp	1339.95
swe.gdp	543.88
che.gdp	665.41
tha.gdp	397.47
tur.gdp	788.86
ukr.gdp	182.59
gbr.gdp	2630.47
usa.gdp	16155.25

	State	Combined ESG Score	2012 GDP
arg.gdp	Argentina	34.175	609.56919
aus.gdp	Australia	71.000	1574.80056
aut.gdp	Austria	71.555	407.37303
bel.gdp	Belgium	69.850	497.78001
bra.gdp	Brazil	52.805	2413.17481
can.gdp	Canada	80.230	1832.71560
chn.gdp	China	35.910	8471.42593
col.gdp	Colombia	58.180	369.65970
hrv.gdp	Croatia	66.950	56.48538
cyp.gdp	Cyprus	66.035	25.01485
cze.gdp	Czech Republic	54.180	206.44158
dnk.gdp	Denmark	85.460	325.01216
egy.gdp	Egypt	47.050	260.15270
fin.gdp	Finland	78.445	256.70647
fra.gdp	France	72.545	2681.41611
deu.gdp	Germany	81.980	3539.61538
grc.gdp	Greece	65.395	245.67067
hun.gdp	Hungary	49.770	127.17618
isl.gdp	Iceland	69.125	14.19452
ind.gdp	India	60.155	1869.20975
idn.gdp	Indonesia	35.085	917.86991
irl.gdp	Ireland	82.135	224.65070
isr.gdp	Israel	51.745	259.61200
ita.gdp	Italy	70.015	2074.63156
jpn.gdp	Japan	66.775	5957.25012
kor.gdp	Korea, Republic of	67.075	1222.80726

mus.gdp	Mauritius	56.350	11.44207
mex.gdp	Mexico	51.900	1184.50359
nld.gdp	Netherlands	85.840	828.94681
nzl.gdp	New Zealand	79.640	176.61661
nor.gdp	Norway	61.885	509.70486
phl.gdp	Philippines	33.765	250.24006
sau.gdp	Saudi Arabia	44.465	733.95573
svn.gdp	Slovenia	76.190	46.23999
zaf.gdp	South Africa	60.005	397.38824
esp.gdp	Spain	75.560	1339.94677
swe.gdp	Sweden	87.605	543.88065
che.gdp	Switzerland	83.950	665.40830
tha.gdp	Thailand	48.150	397.47188
tur.gdp	Turkey	51.905	788.86289
ukr.gdp	Ukraine	39.085	182.59175
gbr.gdp	United Kingdom	81.900	2630.47298
usa.gdp	United States	68.045	16155.25480

Call:

```
lm(formula = esg.gdp.final$`Combined ESG Score` ~ esg.gdp.final$`2012 GDP`)
```

Residuals:

Min	1Q	Median	3Q	Max
-29.721	-11.583	3.294	12.389	24.119

Coefficients:

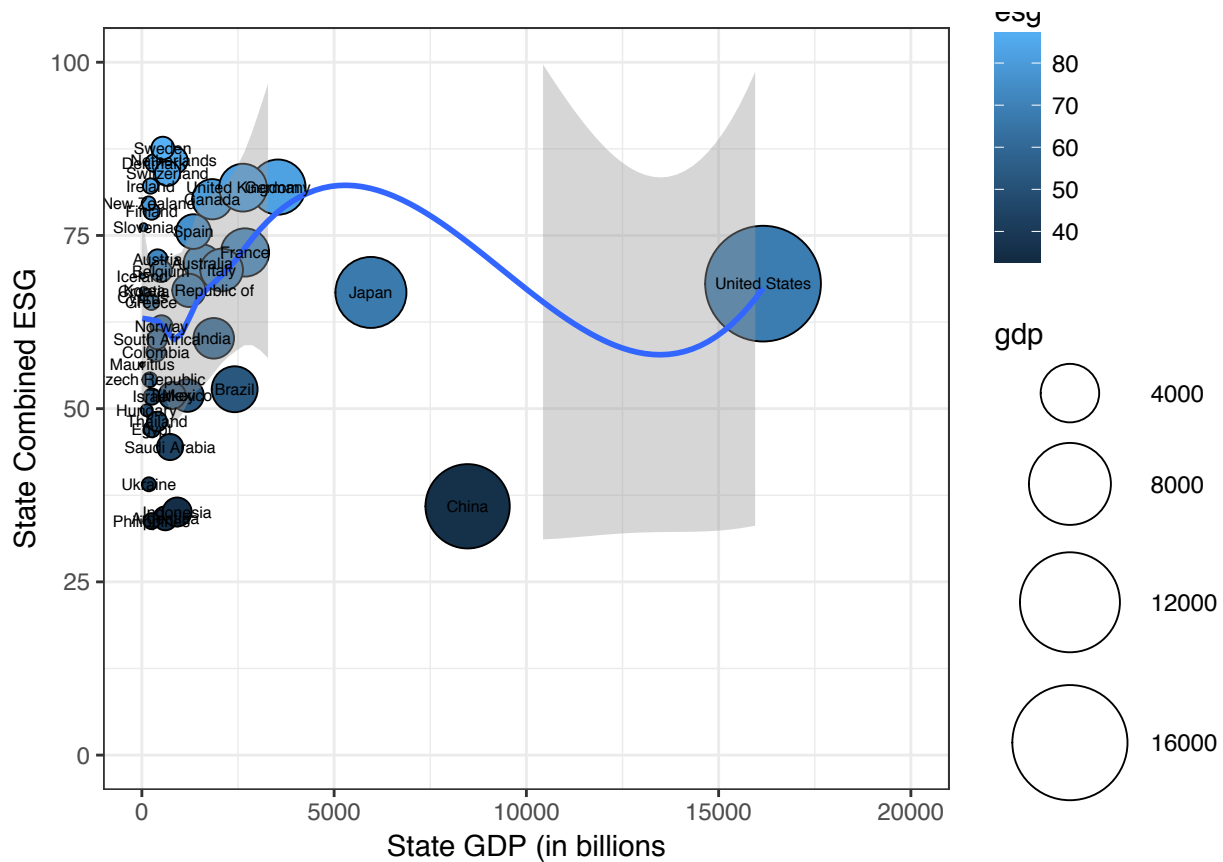
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	6.349e+01	2.715e+00	23.388	<2e-16 ***
esg.gdp.final\$`2012 GDP`	-9.915e-07	8.639e-04	-0.001	0.999

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

Residual standard error: 15.73 on 41 degrees of freedom

Multiple R-squared: 3.213e-08, Adjusted R-squared: -0.02439

F-statistic: 1.317e-06 on 1 and 41 DF, p-value: 0.9991



Isolation - comparing developed and developing markets and the SEIS.

Developed markets.

Country	Country.Code	MARKET.TYPE	REGION
Australia: 1	AUS : 1	Developed :24	European :16
Austria : 1	AUT : 1	Developing: 0	Asia : 4
Belgium : 1	BEL : 1		North America : 2
Canada : 1	CAN : 1		Eastern Europe: 1
China : 1	CHE : 1		Middle East : 1
Denmark : 1	CHN : 1		Africa : 0
(Other) :18	(Other):18		(Other) : 0
TOT.EPI...2004	TOT.EPI...2005	TOT.EPI...2006	TOT.EPI...2007
Min. :42.55	Min. :42.83	Min. :43.08	Min. :42.76
1st Qu.:69.04	1st Qu.:69.15	1st Qu.:69.15	1st Qu.:69.53
Median :74.64	Median :74.74	Median :74.81	Median :75.00
Mean :72.18	Mean :72.36	Mean :72.53	Mean :72.78
3rd Qu.:76.71	3rd Qu.:76.72	3rd Qu.:76.90	3rd Qu.:77.12
Max. :86.64	Max. :86.43	Max. :85.95	Max. :86.69
TOT.EPI...2008	TOT...EPI.2009	TOT.EPI...2010	TOT.EPI...2011
Min. :44.00	Min. :42.97	Min. :43.13	Min. :43.02
1st Qu.:70.15	1st Qu.:70.59	1st Qu.:70.85	1st Qu.:70.61
Median :75.92	Median :76.14	Median :76.11	Median :76.05
Mean :73.32	Mean :73.49	Mean :73.66	Mean :73.55
3rd Qu.:77.69	3rd Qu.:77.83	3rd Qu.:77.94	3rd Qu.:78.03
Max. :88.36	Max. :88.79	Max. :88.60	Max. :88.17

TOT.EPI...2012	TOT.WGI...2004	TOT.WGI...2005	TOT.WGI...2006
Min. :26.71	Min. :36.15	Min. :35.35	Min. :35.77
1st Qu.:48.68	1st Qu.:82.33	1st Qu.:83.16	1st Qu.:84.03
Median :61.19	Median :89.77	Median :90.30	Median :91.70
Mean :58.72	Mean :86.10	Mean :85.86	Mean :86.15
3rd Qu.:74.30	3rd Qu.:95.77	3rd Qu.:95.22	3rd Qu.:95.54
Max. :77.66	Max. :99.60	Max. :99.68	Max. :98.62

TOT.WGI...2007	TOT.WGI...2008	TOT.WGI...2009	TOT.WGI...2010
Min. :36.50	Min. :37.79	Min. :36.79	Min. :35.08
1st Qu.:82.65	1st Qu.:81.30	1st Qu.:81.55	1st Qu.:82.10
Median :92.08	Median :91.61	Median :90.92	Median :89.59
Mean :86.22	Mean :85.84	Mean :85.16	Mean :85.15
3rd Qu.:96.26	3rd Qu.:95.58	3rd Qu.:95.06	3rd Qu.:94.39
Max. :97.58	Max. :97.83	Max. :98.42	Max. :98.11

TOT.WGI...2011	TOT.WGI...2012	EPI.RET...2005	EPI.RET...2006
Min. :35.92	Min. :35.13	Min. :-0.002600	Min. :-0.005600
1st Qu.:82.26	1st Qu.:81.66	1st Qu.: 0.000375	1st Qu.: 0.000225
Median :89.18	Median :89.69	Median : 0.002150	Median : 0.002050
Mean :85.56	Mean :85.29	Mean : 0.002554	Mean : 0.002567
3rd Qu.:95.60	3rd Qu.:95.03	3rd Qu.: 0.003825	3rd Qu.: 0.004050
Max. :98.66	Max. :98.34	Max. : 0.011400	Max. : 0.010900

EPI.RET...2007	EPI.RET...2008	EPI.RET...2009
Min. :-0.007400	Min. :-0.018400	Min. :-0.023400
1st Qu.: -0.000300	1st Qu.: 0.002225	1st Qu.: 0.000900
Median : 0.002900	Median : 0.005950	Median : 0.002200
Mean : 0.003346	Mean : 0.007792	Mean : 0.001879
3rd Qu.: 0.004875	3rd Qu.: 0.015175	3rd Qu.: 0.004325
Max. : 0.021000	Max. : 0.029000	Max. : 0.010400

EPI.RET...2010	EPI.RET...2011	EPI.RET...2012
Min. :-0.002100	Min. :-0.01090	Min. :-0.6577
1st Qu.: 0.001025	1st Qu.: -0.00280	1st Qu.: -0.3420
Median : 0.002200	Median : -0.00075	Median : -0.1726
Mean : 0.002504	Mean : -0.00150	Mean : -0.2019
3rd Qu.: 0.003825	3rd Qu.: 0.00135	3rd Qu.: -0.0204
Max. : 0.007800	Max. : 0.00320	Max. : -0.0046

WGI.RET...2005	WGI.RET...2006	WGI.RET...2007
Min. :-0.029100	Min. :-0.065500	Min. :-0.031100
1st Qu.: -0.012025	1st Qu.: -0.003625	1st Qu.: -0.007375
Median : -0.002250	Median : 0.004700	Median : -0.001650
Mean : -0.003433	Mean : 0.003717	Mean : 0.001529
3rd Qu.: 0.004900	3rd Qu.: 0.015600	3rd Qu.: 0.004875
Max. : 0.020300	Max. : 0.048300	Max. : 0.076300

WGI.RET...2008	WGI.RET...2009	WGI.RET...2010
Min. :-0.053500	Min. :-0.051000	Min. :-0.04650
1st Qu.: -0.013525	1st Qu.: -0.027225	1st Qu.: -0.00515
Median : -0.003700	Median : -0.006050	Median : 0.00145
Mean : -0.003596	Mean : -0.008988	Mean : -0.00055

3rd Qu.: 0.003525	3rd Qu.: 0.006400	3rd Qu.: 0.00530
Max. : 0.035300	Max. : 0.027800	Max. : 0.03190

WGI.RET...2011	WGI.RET...2012
Min. : -0.017600	Min. : -0.031700
1st Qu.: -0.001600	1st Qu.: -0.008000
Median : 0.004150	Median : -0.000550
Mean : 0.005375	Mean : -0.004213
3rd Qu.: 0.017275	3rd Qu.: 0.003800
Max. : 0.027900	Max. : 0.015300

Extracting 2012 EPI data for each developed country

	Country	TOT.EPI...2012
2	Australia	48.89
3	Austria	49.55
4	Belgium	51.83
6	Canada	66.49
7	China	36.69
12	Denmark	76.14
14	Finland	58.55
15	France	61.11
16	Germany	74.66
18	Hungary	29.30
19	Iceland	47.23
22	Ireland	74.18
23	Israel	35.24
24	Italy	73.76
25	Japan	48.06
26	Korea, Republic of	62.06
29	Netherlands	75.88
30	New Zealand	61.26
31	Norway	26.71
36	Spain	76.41
37	Sweden	77.66
38	Switzerland	70.60
42	United Kingdom	76.39
43	United States	50.52

Extracting 2012 WGI data for each developed country

	Country	TOT.WGI...2012
2	Australia	93.11
3	Austria	93.56
4	Belgium	87.87
6	Canada	93.97
7	China	35.13
12	Denmark	94.78
14	Finland	98.34
15	France	83.98
16	Germany	89.30
18	Hungary	70.24
19	Iceland	91.02
22	Ireland	90.09
23	Israel	68.25

24	Italy	66.27
25	Japan	85.49
26	Korea, Republic of	72.09
29	Netherlands	95.80
30	New Zealand	98.02
31	Norway	97.06
36	Spain	74.71
37	Sweden	97.55
38	Switzerland	97.30
42	United Kingdom	87.41
43	United States	85.57

Creating an average score for each developed state

	State	Combined ESG Score
1	Australia	71.000
2	Austria	71.555
3	Belgium	69.850
4	Canada	80.230
5	China	35.910
6	Denmark	85.460
7	Finland	78.445
8	France	72.545
9	Germany	81.980
10	Hungary	49.770
11	Iceland	69.125
12	Ireland	82.135
13	Israel	51.745
14	Italy	70.015
15	Japan	66.775
16	Korea, Republic of	67.075
17	Netherlands	85.840
18	New Zealand	79.640
19	Norway	61.885
20	Spain	75.560
21	Sweden	87.605
22	Switzerland	83.950
23	United Kingdom	81.900
24	United States	68.045

I will now extract notional GDP for each developed country in 2012. Data is provided by the Quandl data platform using data from the World Bank World Development Indicators. GDP values are in bn.

[1] 1574.801

[1] 407.373

[1] 497.78

[1] 1832.716

[1] 8471.426

[1] 325.0122

[1] 256.7065

[1] 2681.416

[1] 3539.615

[1] 127.1762
 [1] 14.19452
 [1] 224.6507
 [1] 259.612
 [1] 2074.632
 [1] 5957.25
 [1] 1222.807
 [1] 828.9468
 [1] 176.6166
 [1] 509.7049
 [1] 1339.947
 [1] 543.8806
 [1] 665.4083
 [1] 2630.473
 [1] 16155.25

2012 GDP
 aus.gdp 1574.80
 aut.gdp 407.37
 bel.gdp 497.78
 can.gdp 1832.72
 chn.gdp 8471.43
 dnk.gdp 325.01
 fin.gdp 256.71
 fra.gdp 2681.42
 deu.gdp 3539.62
 hun.gdp 127.18
 isl.gdp 14.19
 irl.gdp 224.65
 isr.gdp 259.61
 ita.gdp 2074.63
 jpn.gdp 5957.25
 kor.gdp 1222.81
 nld.gdp 828.95
 nzl.gdp 176.62
 nor.gdp 509.70
 esp.gdp 1339.95
 swe.gdp 543.88
 che.gdp 665.41
 gbr.gdp 2630.47
 usa.gdp 16155.25

	State	Combined ESG Score	2012 GDP
aus.gdp	Australia	71.000	1574.80056
aut.gdp	Austria	71.555	407.37303
bel.gdp	Belgium	69.850	497.78001
can.gdp	Canada	80.230	1832.71560
chn.gdp	China	35.910	8471.42593

dnk.gdp	Denmark	85.460	325.01216
fin.gdp	Finland	78.445	256.70647
fra.gdp	France	72.545	2681.41611
deu.gdp	Germany	81.980	3539.61538
hun.gdp	Hungary	49.770	127.17618
isl.gdp	Iceland	69.125	14.19452
irl.gdp	Ireland	82.135	224.65070
isr.gdp	Israel	51.745	259.61200
ita.gdp	Italy	70.015	2074.63156
jpn.gdp	Japan	66.775	5957.25012
kor.gdp	Korea, Republic of	67.075	1222.80726
nld.gdp	Netherlands	85.840	828.94681
nzl.gdp	New Zealand	79.640	176.61661
nor.gdp	Norway	61.885	509.70486
esp.gdp	Spain	75.560	1339.94677
swe.gdp	Sweden	87.605	543.88065
che.gdp	Switzerland	83.950	665.40830
gbr.gdp	United Kingdom	81.900	2630.47298
usa.gdp	United States	68.045	16155.25480

Call:

```
lm(formula = dev.esg.gdp.final$`Combined ESG Score` ~ dev.esg.gdp.final$`2012 GDP`)
```

Residuals:

Min	1Q	Median	3Q	Max
-29.585	-4.197	1.876	10.369	13.911

Coefficients:

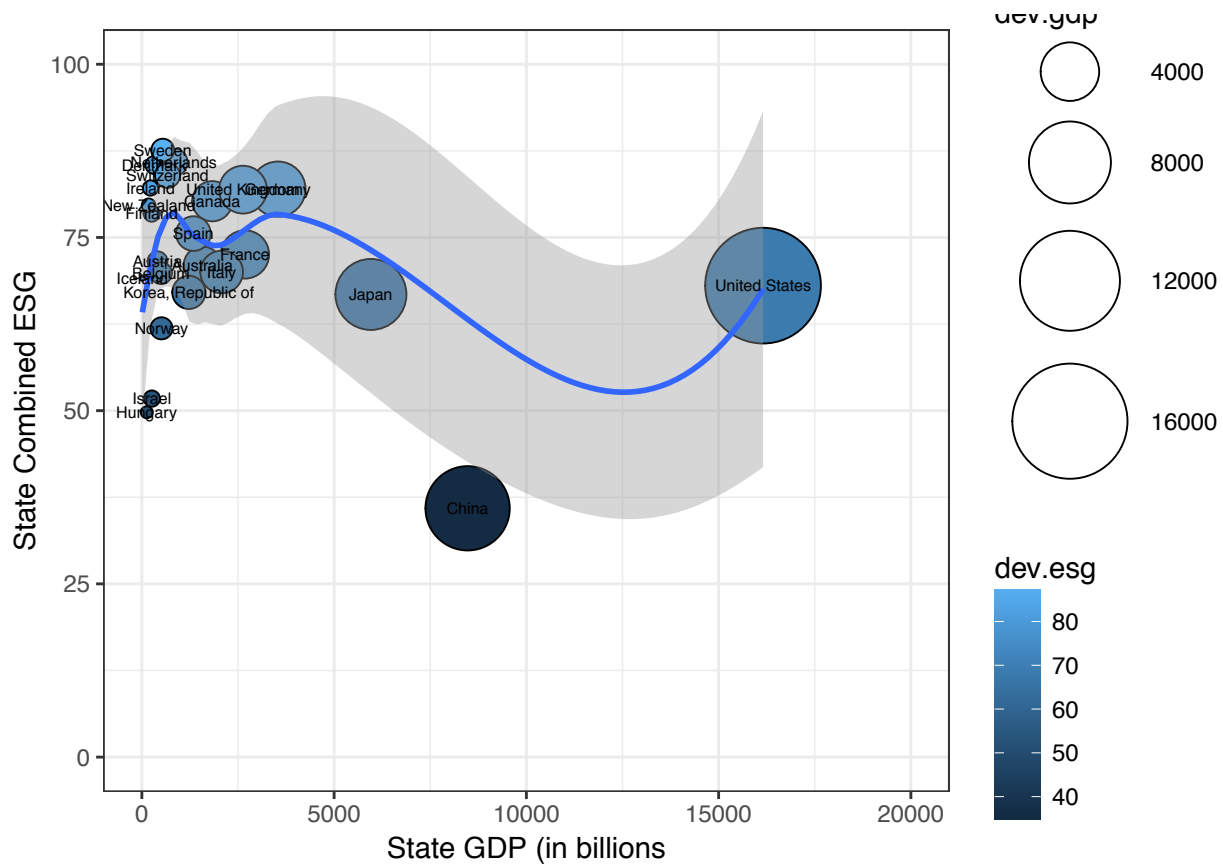
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	74.2560099	2.9491027	25.179	<2e-16 ***
dev.esg.gdp.final\$`2012 GDP`	-0.0010342	0.0007129	-1.451	0.161

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

Residual standard error: 12.28 on 22 degrees of freedom

Multiple R-squared: 0.08731, Adjusted R-squared: 0.04582

F-statistic: 2.105 on 1 and 22 DF, p-value: 0.161



Emerging markets.

	Country	Country.Code	MARKET.TYPE	REGION
Argentina	: 1	ARG : 1	Developed : 0	Eastern Europe:4
Brazil	: 1	BRA : 1	Developing:19	South Asia :4
Colombia	: 1	COL : 1		Middle East :3
Croatia	: 1	CYP : 1		South America :3
Cyprus	: 1	CZE : 1		Africa :2
Czech Republic:	1	EGY : 1		European :2
(Other)	:13	(Other):13		(Other) :1
TOT.EPI...2004	TOT.EPI...2005	TOT.EPI...2006	TOT.EPI...2007	
Min. :29.87	Min. :29.87	Min. :29.97	Min. :29.99	
1st Qu.:48.17	1st Qu.:48.78	1st Qu.:49.09	1st Qu.:49.21	
Median :53.28	Median :53.29	Median :53.50	Median :53.11	
Mean :55.58	Mean :55.86	Mean :56.10	Mean :56.31	
3rd Qu.:62.88	3rd Qu.:63.22	3rd Qu.:63.48	3rd Qu.:63.73	
Max. :79.20	Max. :79.47	Max. :79.67	Max. :80.11	
TOT.EPI...2008	TOT...EPI.2009	TOT.EPI...2010	TOT.EPI...2011	
Min. :31.37	Min. :30.69	Min. :31.03	Min. :31.18	
1st Qu.:49.57	1st Qu.:49.69	1st Qu.:49.91	1st Qu.:50.09	
Median :53.73	Median :54.17	Median :55.01	Median :54.99	
Mean :57.19	Mean :57.38	Mean :57.63	Mean :57.50	
3rd Qu.:64.22	3rd Qu.:64.55	3rd Qu.:64.77	3rd Qu.:64.89	
Max. :81.64	Max. :81.97	Max. :81.94	Max. :81.41	
TOT.EPI...2012	TOT.WGI...2004	TOT.WGI...2005	TOT.WGI...2006	

Min. :27.18	Min. :26.09	Min. :28.03	Min. :31.60
1st Qu.:40.83	1st Qu.:38.53	1st Qu.:41.46	1st Qu.:40.60
Median :52.04	Median :51.79	Median :49.78	Median :48.92
Mean :53.24	Mean :53.05	Mean :53.54	Mean :52.95
3rd Qu.:68.08	3rd Qu.:69.67	3rd Qu.:67.59	3rd Qu.:67.58
Max. :80.47	Max. :81.59	Max. :79.08	Max. :81.15

TOT.WGI...2007	TOT.WGI...2008	TOT.WGI...2009	TOT.WGI...2010
Min. :34.84	Min. :34.63	Min. :29.57	Min. :32.22
1st Qu.:42.13	1st Qu.:41.15	1st Qu.:39.48	1st Qu.:41.43
Median :47.20	Median :44.92	Median :46.31	Median :45.86
Mean :53.40	Mean :53.49	Mean :52.68	Mean :52.83
3rd Qu.:67.14	3rd Qu.:65.75	3rd Qu.:63.91	3rd Qu.:63.66
Max. :81.52	Max. :84.18	Max. :81.19	Max. :81.42

TOT.WGI...2011	TOT.WGI...2012	EPI.RET...2005	EPI.RET...2006
Min. :28.65	Min. :27.87	Min. : -0.017000	Min. : -0.016400
1st Qu.:40.56	1st Qu.:40.09	1st Qu.: 0.001050	1st Qu.: -0.001500
Median :46.44	Median :47.98	Median : 0.005000	Median : 0.003300
Mean :52.60	Mean :52.21	Mean : 0.005184	Mean : 0.003789
3rd Qu.:63.46	3rd Qu.:61.23	3rd Qu.: 0.011750	3rd Qu.: 0.010150
Max. :81.13	Max. :81.29	Max. : 0.023600	Max. : 0.017100

EPI.RET...2007	EPI.RET...2008	EPI.RET...2009
Min. : -0.029200	Min. : -0.00270	Min. : -0.021700
1st Qu.: -0.001150	1st Qu.: 0.00860	1st Qu.: -0.002050
Median : 0.002400	Median : 0.01410	Median : 0.004000
Mean : 0.003642	Mean : 0.01691	Mean : 0.002121
3rd Qu.: 0.005600	3rd Qu.: 0.02660	3rd Qu.: 0.007950
Max. : 0.044500	Max. : 0.04600	Max. : 0.018900

EPI.RET...2010	EPI.RET...2011	EPI.RET...2012
Min. : -0.002700	Min. : -0.013500	Min. : -0.61440
1st Qu.: 0.001150	1st Qu.: -0.006150	1st Qu.: -0.30345
Median : 0.003800	Median : 0.000500	Median : -0.01880
Mean : 0.004737	Mean : -0.001637	Mean : -0.02681
3rd Qu.: 0.007650	3rd Qu.: 0.002300	3rd Qu.: 0.00345
Max. : 0.015700	Max. : 0.005900	Max. : 1.58080

WGI.RET...2005	WGI.RET...2006	WGI.RET...2007
Min. : -0.05320	Min. : -0.14440	Min. : -0.03750
1st Qu.: -0.02830	1st Qu.: -0.02450	1st Qu.: -0.00445
Median : 0.00710	Median : -0.00900	Median : 0.00450
Mean : 0.02349	Mean : -0.01135	Mean : 0.01361
3rd Qu.: 0.05620	3rd Qu.: 0.01810	3rd Qu.: 0.01960
Max. : 0.15580	Max. : 0.12740	Max. : 0.11870

WGI.RET...2008	WGI.RET...2009	WGI.RET...2010
Min. : -0.0618000	Min. : -0.14610	Min. : -0.092500
1st Qu.: -0.0187500	1st Qu.: -0.02985	1st Qu.: -0.012750
Median : -0.0056000	Median : -0.01770	Median : -0.003100
Mean : -0.0002368	Mean : -0.01521	Mean : 0.005595
3rd Qu.: 0.0271500	3rd Qu.: 0.00825	3rd Qu.: 0.016400
Max. : 0.0380000	Max. : 0.06150	Max. : 0.089600

WGI.RET...2011	WGI.RET...2012
Min. : -0.175500	Min. : -0.074900
1st Qu.: -0.014150	1st Qu.: -0.034100
Median : 0.006100	Median : -0.012300
Mean : -0.007832	Mean : -0.002468
3rd Qu.: 0.020350	3rd Qu.: 0.014500
Max. : 0.092100	Max. : 0.128800

Extracting 2012 EPI data for each emerging market country

	Country	TOT.EPI...2012
1	Argentina	28.69
5	Brazil	52.04
8	Colombia	73.13
9	Croatia	69.93
10	Cyprus	50.78
11	Czech Republic	31.39
13	Egypt	66.23
17	Greece	72.29
20	India	80.47
21	Indonesia	32.07
27	Mauritius	36.99
28	Mexico	55.82
32	Philippines	27.18
33	Saudi Arabia	44.67
34	Slovenia	75.32
35	South Africa	62.06
39	Thailand	51.96
40	Turkey	53.03
41	Ukraine	47.56

Extracting 2012 WGI data for each emerging market country

	Country	TOT.WGI...2012
1	Argentina	39.66
5	Brazil	53.57
8	Colombia	43.23
9	Croatia	63.97
10	Cyprus	81.29
11	Czech Republic	76.97
13	Egypt	27.87
17	Greece	58.50
20	India	39.84
21	Indonesia	38.10
27	Mauritius	75.71
28	Mexico	47.98
32	Philippines	40.35
33	Saudi Arabia	44.26
34	Slovenia	77.06
35	South Africa	57.95
39	Thailand	44.34
40	Turkey	50.78
41	Ukraine	30.61

Creating an average score for each emerging market state

	State	Combined ESG Score
1	Argentina	34.175
2	Brazil	52.805
3	Colombia	58.180
4	Croatia	66.950
5	Cyprus	66.035
6	Czech Republic	54.180
7	Egypt	47.050
8	Greece	65.395
9	India	60.155
10	Indonesia	35.085
11	Mauritius	56.350
12	Mexico	51.900
13	Philippines	33.765
14	Saudi Arabia	44.465
15	Slovenia	76.190
16	South Africa	60.005
17	Thailand	48.150
18	Turkey	51.905
19	Ukraine	39.085

I will now extract notional GDP for each emerging market country in 2012. Data is provided by the Quandl data platform using data from the World Bank World Development Indicators. GDP values are in bn.

[1] 609.5692
 [1] 2413.175
 [1] 369.6597
 [1] 56.48538
 [1] 25.01485
 [1] 260.1527
 [1] 245.6707
 [1] 1869.21
 [1] 917.8699
 [1] 11.44207
 [1] 1184.504
 [1] 192.8058
 [1] 250.2401
 [1] 733.9557
 [1] 46.23999
 [1] 397.3882
 [1] 397.4719
 [1] 788.8629
 [1] 182.5917

```

      2012 GDP
arg.gdp  609.57
bra.gdp 2413.17
col.gdp  369.66
hrv.gdp   56.49
cyp.gdp   25.01
egy.gdp  260.15
grc.gdp  245.67
ind.gdp 1869.21
idn.gdp  917.87
mus.gdp   11.44
mex.gdp 1184.50
per.gdp  192.81
phl.gdp  250.24
sau.gdp  733.96
svn.gdp   46.24
zaf.gdp  397.39
tha.gdp  397.47
tur.gdp  788.86
ukr.gdp  182.59

```

```

      State Combined ESG Score  2012 GDP
arg.gdp  Argentina      34.175 609.56919
bra.gdp   Brazil       52.805 2413.17481
col.gdp   Colombia     58.180 369.65970
hrv.gdp   Croatia      66.950  56.48538
cyp.gdp   Cyprus       66.035  25.01485
egy.gdp  Czech Republic 54.180 260.15270
grc.gdp   Egypt        47.050 245.67067
ind.gdp   Greece       65.395 1869.20975
idn.gdp   India        60.155  917.86991
mus.gdp   Indonesia    35.085  11.44207
mex.gdp   Mauritius    56.350 1184.50359
per.gdp   Mexico       51.900  192.80582
phl.gdp   Philippines  33.765  250.24006
sau.gdp   Saudi Arabia  44.465  733.95573
svn.gdp   Slovenia     76.190  46.23999
zaf.gdp   South Africa  60.005  397.38824
tha.gdp   Thailand     48.150  397.47188
tur.gdp   Turkey       51.905  788.86289
ukr.gdp   Ukraine      39.085  182.59175

```

Call:

```
lm(formula = em.esg.gdp.final$`Combined ESG Score` ~ em.esg.gdp.final$`2012 GDP`)
```

Residuals:

```

      Min      1Q   Median      3Q      Max
-18.6129  -6.8126  -0.1299   7.2047  24.4267

```

Coefficients:

```

              Estimate Std. Error t value Pr(>|t|)
(Intercept)    51.67919    3.807394  13.573 1.5e-10 ***
em.esg.gdp.final$`2012 GDP`  0.001819    0.004465   0.407   0.689
---

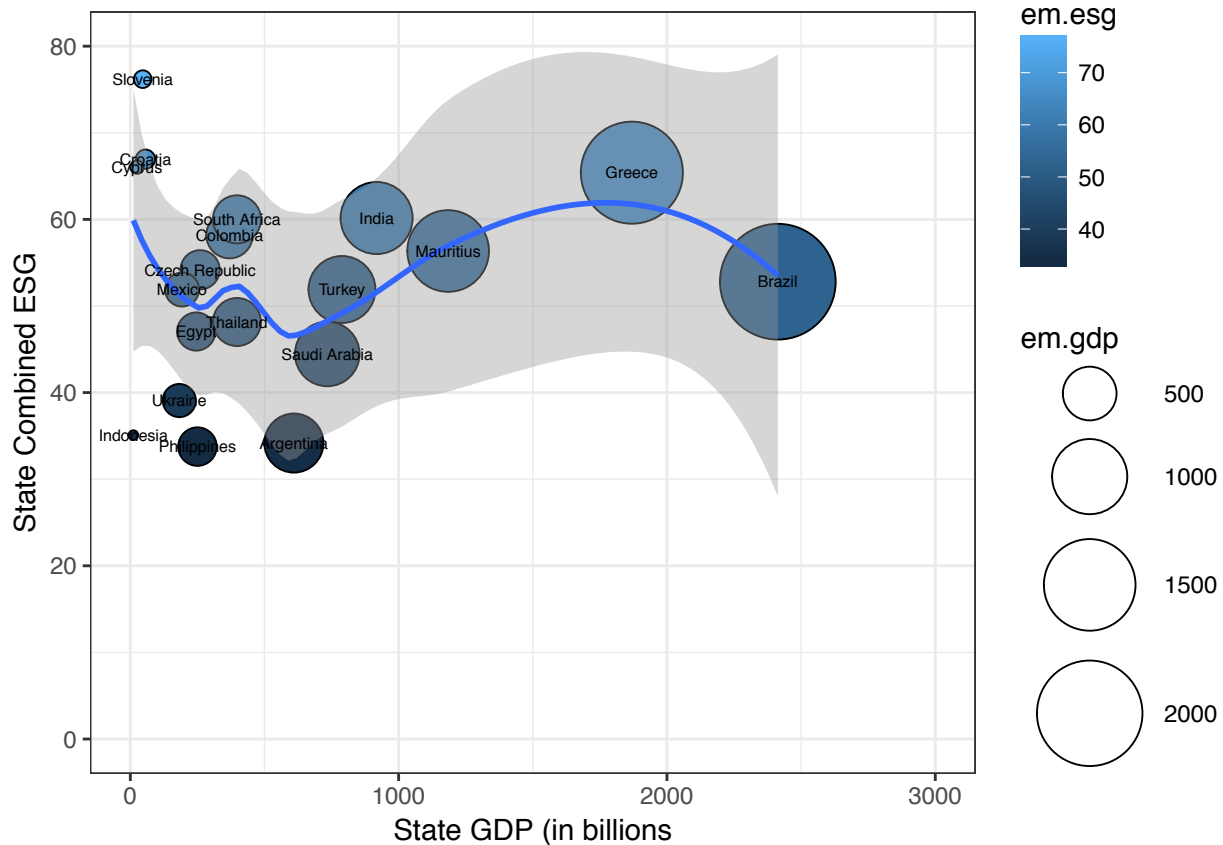
```

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

Residual standard error: 12.23 on 17 degrees of freedom

Multiple R-squared: 0.009666, Adjusted R-squared: -0.04859

F-statistic: 0.1659 on 1 and 17 DF, p-value: 0.6888



Pulling of stock index data for each state within the sample. Stock index return data is the longitudinal period of 2004 - 2012. The data is provided through the Quandl data platform using data feeds provided by YAHOO, Zagreb Stock Exchange and the World Federation of Exchanges.

Creating a data frame for all markets

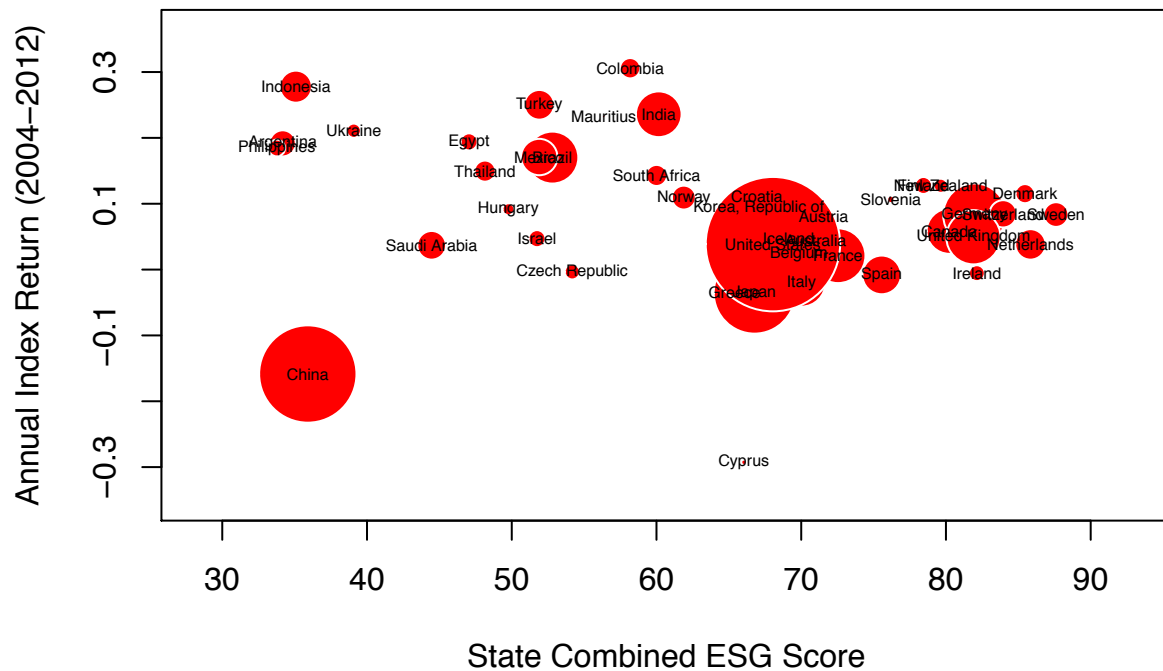
	State	Combined ESG Score 2004 - 2012	Annual Return
TS.1	Argentina	34.175	0.191682464
TS.1.1	Australia	71.000	0.044403219
TS.1.2	Austria	71.555	0.080249765
TS.1.3	Belgium	69.850	0.023570483
TS.1.4	Brazil	52.805	0.170078297
TS.1.5	Canada	80.230	0.058284548
TS.1.6	China	35.910	-0.158594950
TS.1.7	Colombia	58.180	0.305796891
TS.1.8	Croatia	66.950	0.110622054
TS.1.9	Cyprus	66.035	-0.292697468
TS.1.10	Czech Republic	54.180	-0.003441554
TS.1.11	Denmark	85.460	0.115310042
TS.1.12	Egypt	47.050	0.193973598
TS.1.13	Finland	78.445	0.127766523
TS.1.14	France	72.545	0.021014983

TS.1.15	Germany	81.980	0.083101403
TS.1.16	Greece	65.395	-0.034181914
TS.1.17	Hungary	49.770	0.091626207
TS.1.18	Iceland	69.125	0.046972540
TS.1.19	India	60.155	0.235873599
TS.1.20	Indonesia	35.085	0.277787503
TS.1.21	Ireland	82.135	-0.005447842
TS.1.22	Israel	51.745	0.046972540
TS.1.23	Italy	70.015	-0.019749303
TS.1.24	Japan	66.775	-0.035298438
TS.1.25	Korea, Republic of	67.075	0.093503588
TS.1.26	Mauritius	56.350	0.232405615
TS.1.27	Mexico	51.900	0.170910289
TS.1.28	Netherlands	85.840	0.038233037
TS.1.29	New Zealand	79.640	0.127269257
TS.1.30	Norway	61.885	0.109319810
TS.1.31	Philippines	33.765	0.184631216
TS.1.32	Saudi Arabia	44.465	0.036867149
TS.1.33	Slovenia	76.190	0.106508313
TS.1.34	South Africa	60.005	0.142949268
TS.1.35	Spain	75.560	-0.008100577
TS.1.36	Sweden	87.605	0.083556419
TS.1.37	Switzerland	83.950	0.084637839
TS.1.38	Thailand	48.150	0.149524530
TS.1.39	Turkey	51.905	0.250253087
TS.1.40	Ukraine	39.085	0.210891629
TS.1.41	United Kingdom	81.900	0.049072313
TS.1.42	United States	68.045	0.038628332
2012 GDP			
TS.1	609.56919		
TS.1.1	1574.80056		
TS.1.2	407.37303		
TS.1.3	497.78001		
TS.1.4	2413.17481		
TS.1.5	1832.71560		
TS.1.6	8471.42593		
TS.1.7	369.65970		
TS.1.8	56.48538		
TS.1.9	25.01485		
TS.1.10	206.44158		
TS.1.11	325.01216		
TS.1.12	260.15270		
TS.1.13	256.70647		
TS.1.14	2681.41611		
TS.1.15	3539.61538		
TS.1.16	245.67067		
TS.1.17	127.17618		
TS.1.18	14.19452		
TS.1.19	1869.20975		
TS.1.20	917.86991		
TS.1.21	224.65070		
TS.1.22	259.61200		
TS.1.23	2074.63156		
TS.1.24	5957.25012		

```

TS.1.25 1222.80726
TS.1.26 11.44207
TS.1.27 1184.50359
TS.1.28 828.94681
TS.1.29 176.61661
TS.1.30 509.70486
TS.1.31 250.24006
TS.1.32 733.95573
TS.1.33 46.23999
TS.1.34 397.38824
TS.1.35 1339.94677
TS.1.36 543.88065
TS.1.37 665.40830
TS.1.38 397.47188
TS.1.39 788.86289
TS.1.40 182.59175
TS.1.41 2630.47298
TS.1.42 16155.25480

```



Call:

```
lm(formula = esg.ret.final$`Combined ESG Score` ~ esg.ret.final$`2004 - 2012 Annual Return`)
```

Residuals:

Min	1Q	Median	3Q	Max
-37.983	-12.341	2.482	10.758	23.939

Coefficients:

	Estimate	Std. Error	t value
(Intercept)	67.195	2.923	22.992
esg.ret.final\$`2004 - 2012 Annual Return`	-42.235	20.738	-2.037
Pr(> t)			
(Intercept)			<2e-16 ***

```
esg.ret.final$`2004 - 2012 Annual Return` 0.0482 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 14.99 on 41 degrees of freedom
Multiple R-squared:  0.09187,    Adjusted R-squared:  0.06972
F-statistic: 4.148 on 1 and 41 DF,  p-value: 0.04818
```

```
[1] -0.3031033
```

Extracting the annual returns for each of the ESG Index Indicators. I will calculate annualized returns for each of the indicators (EPI and WGI) and then proceed to create a combined annualized return for all of the indicators creating a Total ESG Index Return variable (TOTESGRET).

Creating dataframe

	Country	EPI.RET...2005	EPI.RET...2006	EPI.RET...2007
1	Argentina	0.0074	0.0095	0.0035
2	Australia	-0.0026	-0.0004	0.0039
3	Austria	0.0000	0.0025	0.0038
4	Belgium	0.0029	0.0042	0.0089
5	Brazil	0.0074	0.0010	0.0014
6	Canada	0.0043	0.0000	0.0044
7	China	0.0066	0.0058	-0.0074
8	Colombia	0.0179	0.0032	0.0014
9	Croatia	0.0025	0.0108	0.0159
10	Cyprus	0.0058	-0.0021	0.0024
11	Czech Republic	0.0034	0.0025	0.0055
12	Denmark	0.0114	0.0007	0.0046
13	Egypt	0.0115	0.0072	0.0445
14	Finland	0.0025	0.0018	-0.0033
15	France	0.0016	0.0004	0.0066
16	Germany	0.0042	-0.0001	0.0044
17	Greece	0.0050	0.0171	-0.0036
18	Hungary	0.0016	-0.0015	0.0022
19	Iceland	-0.0012	-0.0023	-0.0023
20	India	0.0000	0.0033	0.0007
21	Indonesia	0.0136	-0.0164	0.0007
22	Ireland	-0.0007	0.0019	0.0015
23	Israel	0.0005	0.0017	0.0210
24	Italy	0.0062	0.0022	0.0014
25	Japan	0.0037	0.0039	-0.0036
26	Korea, Republic of	0.0021	0.0109	0.0057
27	Mauritius	-0.0014	-0.0033	-0.0030
28	Mexico	-0.0170	0.0090	0.0085
29	Netherlands	0.0037	0.0035	0.0036
30	New Zealand	0.0016	0.0040	0.0169
31	Norway	-0.0003	0.0049	0.0008
32	Philippines	0.0236	-0.0032	-0.0208
33	Saudi Arabia	0.0135	0.0116	-0.0063
34	Slovenia	0.0019	-0.0009	0.0045
35	South Africa	0.0021	0.0109	0.0057
36	Spain	0.0029	0.0032	-0.0009
37	Sweden	0.0022	0.0003	-0.0001
38	Switzerland	-0.0024	-0.0056	0.0086
39	Thailand	0.0002	0.0039	-0.0292

40	Turkey	0.0120	0.0118	0.0052
41	Ukraine	-0.0109	-0.0039	0.0322
42	United Kingdom	0.0096	0.0105	0.0020
43	United States	0.0009	0.0091	-0.0024

	EPI.RET...2008	EPI.RET...2009	EPI.RET...2010	EPI.RET...2011
1	0.0089	0.0043	0.0078	0.0057
2	0.0020	0.0024	0.0039	0.0021
3	0.0191	0.0009	0.0046	-0.0109
4	0.0067	0.0029	0.0023	-0.0043
5	0.0083	0.0077	0.0038	0.0032
6	0.0059	0.0008	0.0014	0.0005
7	0.0290	-0.0234	0.0037	-0.0026
8	0.0028	0.0034	0.0016	0.0014
9	0.0199	0.0102	0.0066	-0.0135
10	0.0011	0.0039	0.0006	0.0008
11	0.0191	0.0040	-0.0004	-0.0065
12	0.0075	0.0044	0.0022	-0.0025
13	0.0095	0.0189	0.0018	-0.0058
14	0.0005	0.0005	0.0008	-0.0025
15	0.0050	0.0070	0.0038	-0.0014
16	0.0169	0.0024	0.0019	-0.0066
17	0.0103	0.0096	0.0025	-0.0039
18	0.0207	0.0043	0.0030	-0.0092
19	0.0248	0.0016	0.0003	0.0003
20	0.0460	-0.0217	0.0111	0.0048
21	0.0345	-0.0038	-0.0027	0.0005
22	0.0023	0.0013	0.0051	-0.0001
23	-0.0184	0.0033	0.0015	0.0018
24	0.0102	0.0018	0.0001	-0.0034
25	-0.0013	0.0044	0.0078	0.0024
26	0.0146	0.0066	0.0064	0.0032
27	0.0047	0.0044	0.0075	0.0002
28	0.0117	0.0082	0.0092	0.0059
29	0.0062	0.0104	0.0014	-0.0026
30	0.0018	0.0004	-0.0014	0.0009
31	-0.0008	0.0013	0.0022	0.0009
32	0.0326	-0.0166	0.0007	0.0009
33	-0.0027	0.0006	0.0020	0.0005
34	0.0327	-0.0003	0.0003	-0.0107
35	0.0146	0.0066	0.0064	0.0032
36	0.0028	0.0008	0.0011	0.0018
37	0.0028	0.0032	-0.0001	0.0012
38	0.0193	0.0049	-0.0021	-0.0049
39	0.0254	-0.0092	0.0089	-0.0066
40	0.0141	0.0179	0.0157	-0.0065
41	0.0278	-0.0078	0.0066	-0.0047
42	0.0034	0.0020	0.0027	0.0023
43	0.0060	0.0009	0.0075	-0.0024

	EPI.RET...2012	WGI.RET...2005	WGI.RET...2006	WGI.RET...2007
1	-0.4202	0.1445	-0.0112	-0.0046
2	-0.4065	-0.0113	-0.0017	0.0072
3	-0.3651	0.0035	0.0139	0.0240
4	-0.2194	-0.0101	0.0054	0.0032
5	-0.0161	-0.0425	-0.0099	-0.0033

6	-0.0901	-0.0051	0.0246	-0.0068
7	-0.1471	-0.0221	0.0119	0.0204
8	0.4424	-0.0147	0.0817	0.0191
9	0.1252	-0.0532	0.0026	0.0201
10	-0.2334	0.0071	0.0275	0.0046
11	-0.6144	0.0238	0.0127	-0.0118
12	-0.0092	0.0008	0.0033	0.0041
13	0.0726	0.0292	-0.1439	0.1008
14	-0.2268	0.0008	-0.0106	-0.0105
15	-0.1381	0.0039	0.0085	-0.0034
16	-0.0693	0.0172	0.0207	0.0011
17	-0.0128	-0.0426	-0.0090	-0.0043
18	-0.5799	-0.0083	0.0053	-0.0124
19	-0.3824	0.0091	-0.0124	-0.0039
20	1.5808	0.0545	-0.0068	-0.0293
21	-0.2784	0.0744	0.1274	0.1187
22	-0.0066	0.0203	-0.0033	0.0097
23	-0.4676	-0.0279	0.0483	-0.0225
24	-0.0051	-0.0291	-0.0046	-0.0057
25	-0.3343	-0.0037	0.0277	-0.0311
26	-0.0234	0.0202	-0.0493	0.0763
27	-0.3621	-0.0173	-0.0304	0.0456
28	0.0151	-0.0480	-0.0173	-0.0352
29	-0.0109	-0.0008	-0.0120	-0.0008
30	-0.1980	-0.0157	0.0000	0.0026
31	-0.6577	-0.0007	-0.0001	-0.0065
32	-0.3820	0.1466	-0.0926	0.0051
33	-0.3285	0.0525	-0.0499	0.0568
34	-0.0082	-0.0308	0.0133	-0.0011
35	-0.0234	-0.0251	0.0229	-0.0375
36	-0.0416	0.0079	-0.0655	-0.0025
37	-0.0046	-0.0206	0.0041	0.0103
38	-0.1993	-0.0142	0.0135	0.0035
39	-0.0176	-0.0258	-0.1444	-0.0025
40	-0.0296	0.0579	-0.0186	0.0045
41	-0.0188	0.1558	0.0303	0.0129
42	-0.0114	-0.0072	0.0387	-0.0105
43	-0.2501	0.0107	0.0228	-0.0091
WGI.RET...2008 WGI.RET...2009 WGI.RET...2010 WGI.RET...2011				
1	-0.0618	-0.0567	0.0838	0.0388
2	0.0045	-0.0068	0.0011	-0.0014
3	-0.0109	-0.0234	0.0045	-0.0107
4	-0.0145	0.0195	-0.0051	0.0108
5	0.0380	0.0593	0.0353	-0.0144
6	0.0054	0.0197	-0.0198	0.0071
7	0.0353	-0.0265	-0.0465	0.0239
8	-0.0071	-0.0296	0.0224	0.0921
9	-0.0091	0.0247	0.0022	0.0077
10	0.0326	-0.0418	0.0094	-0.0036
11	0.0232	0.0028	-0.0036	0.0141
12	0.0001	-0.0053	0.0018	0.0041
13	0.0353	0.0615	-0.0925	-0.1755
14	0.0026	0.0060	-0.0031	0.0024
15	0.0032	-0.0109	0.0068	-0.0174

16	-0.0148	-0.0003	-0.0102	-0.0047
17	-0.0313	-0.0755	-0.0100	-0.0139
18	-0.0268	-0.0510	0.0040	0.0014
19	-0.0150	-0.0385	-0.0189	0.0183
20	-0.0047	-0.0227	-0.0155	-0.0303
21	0.0229	-0.0232	-0.0031	0.0190
22	-0.0068	-0.0143	-0.0119	-0.0176
23	0.0141	-0.0434	0.0319	0.0175
24	0.0010	-0.0294	0.0019	-0.0061
25	-0.0132	0.0275	-0.0053	0.0077
26	-0.0535	0.0278	0.0032	0.0075
27	0.0283	-0.0301	-0.0068	0.0217
28	-0.0540	0.0372	-0.0097	0.0126
29	0.0028	0.0076	-0.0006	0.0179
30	-0.0057	0.0081	0.0050	0.0188
31	0.0119	-0.0027	0.0109	0.0042
32	-0.0056	-0.0293	-0.0313	0.0563
33	0.0312	-0.0044	0.0623	-0.1448
34	0.0260	-0.0113	-0.0289	0.0029
35	-0.0218	-0.0177	0.0104	0.0057
36	-0.0058	-0.0150	0.0084	0.0279
37	-0.0065	0.0022	0.0001	0.0172
38	-0.0017	-0.0028	-0.0032	-0.0022
39	-0.0157	0.0137	-0.0174	0.0247
40	-0.0075	0.0002	0.0097	0.0061
41	-0.0234	-0.1461	0.0896	-0.0680
42	-0.0159	-0.0300	0.0256	-0.0013
43	0.0239	-0.0338	0.0062	0.0037

WGI.RET...2012

1	-0.0749
2	0.0089
3	0.0087
4	-0.0046
5	-0.0244
6	0.0036
7	-0.0220
8	-0.0482
9	-0.0087
10	0.0020
11	-0.0266
12	-0.0262
13	-0.0272
14	-0.0001
15	-0.0006
16	0.0044
17	-0.0623
18	-0.0317
19	-0.0051
20	-0.0494
21	0.0619
22	0.0072
23	0.0025
24	-0.0125
25	-0.0005

26	-0.0212
27	0.0097
28	0.0332
29	0.0029
30	-0.0065
31	-0.0010
32	0.0911
33	0.1288
34	-0.0254
35	-0.0410
36	-0.0291
37	-0.0049
38	0.0153
39	0.0075
40	-0.0123
41	0.0193
42	0.0026
43	0.0088

Calculating annualized returns for each of the ESG Indexes.

Combining Index Return data to primary data frame

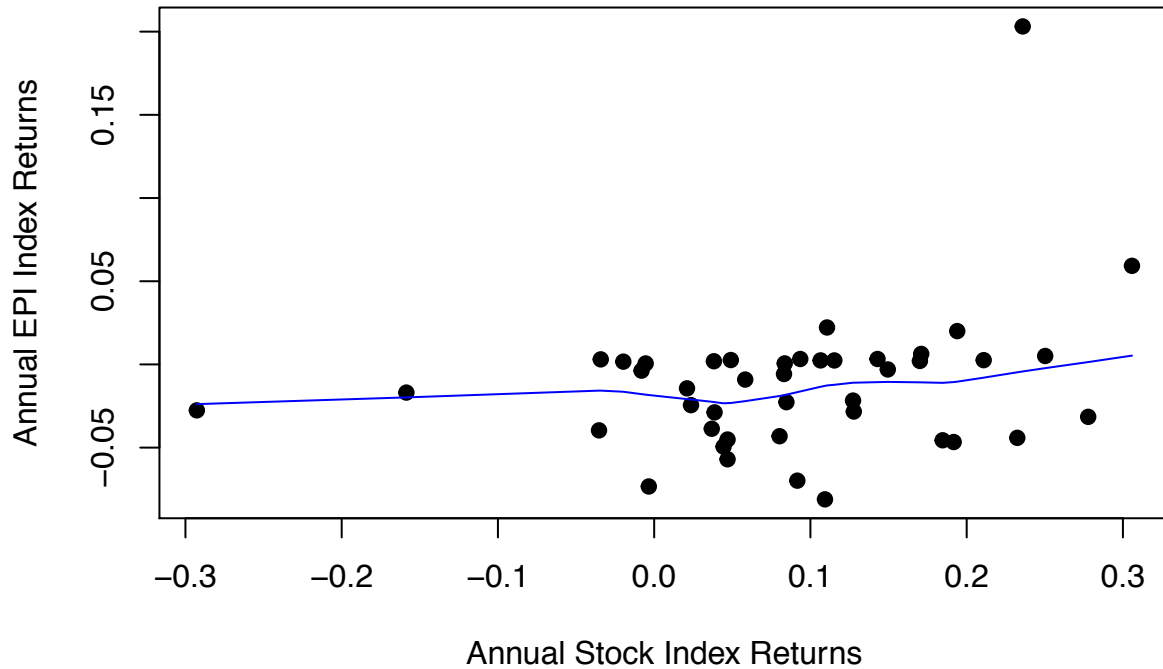
	State	Combined ESG Score 2004 - 2012	Annual Return
TS.1	Argentina	34.175	0.191682464
TS.1.1	Australia	71.000	0.044403219
TS.1.2	Austria	71.555	0.080249765
TS.1.3	Belgium	69.850	0.023570483
TS.1.4	Brazil	52.805	0.170078297
TS.1.5	Canada	80.230	0.058284548
TS.1.6	China	35.910	-0.158594950
TS.1.7	Colombia	58.180	0.305796891
TS.1.8	Croatia	66.950	0.110622054
TS.1.9	Cyprus	66.035	-0.292697468
TS.1.10	Czech Republic	54.180	-0.003441554
TS.1.11	Denmark	85.460	0.115310042
TS.1.12	Egypt	47.050	0.193973598
TS.1.13	Finland	78.445	0.127766523
TS.1.14	France	72.545	0.021014983
TS.1.15	Germany	81.980	0.083101403
TS.1.16	Greece	65.395	-0.034181914
TS.1.17	Hungary	49.770	0.091626207
TS.1.18	Iceland	69.125	0.046972540
TS.1.19	India	60.155	0.235873599
TS.1.20	Indonesia	35.085	0.277787503
TS.1.21	Ireland	82.135	-0.005447842
TS.1.22	Israel	51.745	0.046972540
TS.1.23	Italy	70.015	-0.019749303
TS.1.24	Japan	66.775	-0.035298438
TS.1.25	Korea, Republic of	67.075	0.093503588
TS.1.26	Mauritius	56.350	0.232405615
TS.1.27	Mexico	51.900	0.170910289
TS.1.28	Netherlands	85.840	0.038233037
TS.1.29	New Zealand	79.640	0.127269257
TS.1.30	Norway	61.885	0.109319810

TS.1.31	Philippines	33.765	0.184631216
TS.1.32	Saudi Arabia	44.465	0.036867149
TS.1.33	Slovenia	76.190	0.106508313
TS.1.34	South Africa	60.005	0.142949268
TS.1.35	Spain	75.560	-0.008100577
TS.1.36	Sweden	87.605	0.083556419
TS.1.37	Switzerland	83.950	0.084637839
TS.1.38	Thailand	48.150	0.149524530
TS.1.39	Turkey	51.905	0.250253087
TS.1.40	Ukraine	39.085	0.210891629
TS.1.41	United Kingdom	81.900	0.049072313
TS.1.42	United States	68.045	0.038628332
2012 GDP epi.annual wgi.annual			
TS.1	609.56919	-0.0466375	0.0072375
TS.1.1	1574.80056	-0.0494000	0.0000625
TS.1.2	407.37303	-0.0431375	0.0012000
TS.1.3	497.78001	-0.0244750	0.0005750
TS.1.4	2413.17481	0.0020875	0.0047625
TS.1.5	1832.71560	-0.0091000	0.0035875
TS.1.6	8471.42593	-0.0169250	-0.0032000
TS.1.7	369.65970	0.0592625	0.0144625
TS.1.8	56.48538	0.0222000	-0.0017125
TS.1.9	25.01485	-0.0276125	0.0047250
TS.1.10	206.44158	-0.0733500	0.0043250
TS.1.11	325.01216	0.0023875	-0.0021625
TS.1.12	260.15270	0.0200250	-0.0265375
TS.1.13	256.70647	-0.0283125	-0.0015625
TS.1.14	2681.41611	-0.0143875	-0.0012375
TS.1.15	3539.61538	-0.0057750	0.0016750
TS.1.16	245.67067	0.0030250	-0.0311125
TS.1.17	127.17618	-0.0698500	-0.0149375
TS.1.18	14.19452	-0.0451500	-0.0083000
TS.1.19	1869.20975	0.2031250	-0.0130250
TS.1.20	917.86991	-0.0315000	0.0497500
TS.1.21	224.65070	0.0005875	-0.0020875
TS.1.22	259.61200	-0.0570250	0.0025625
TS.1.23	2074.63156	0.0016750	-0.0105625
TS.1.24	5957.25012	-0.0396250	0.0011375
TS.1.25	1222.80726	0.0032625	0.0013750
TS.1.26	11.44207	-0.0441250	0.0025875
TS.1.27	1184.50359	0.0063250	-0.0101500
TS.1.28	828.94681	0.0019125	0.0021250
TS.1.29	176.61661	-0.0217250	0.0008250
TS.1.30	509.70486	-0.0810875	0.0020000
TS.1.31	250.24006	-0.0456000	0.0175375
TS.1.32	733.95573	-0.0386625	0.0165625
TS.1.33	46.23999	0.0024125	-0.0069125
TS.1.34	397.38824	0.0032625	-0.0130125
TS.1.35	1339.94677	-0.0037375	-0.0092125
TS.1.36	543.88065	0.0006125	0.0002375
TS.1.37	665.40830	-0.0226875	0.0010250
TS.1.38	397.47188	-0.0030250	-0.0199875
TS.1.39	788.86289	0.0050750	0.0050000
TS.1.40	182.59175	0.0025625	0.0088000

TS.1.41 2630.47298 0.0026375 0.0002500
TS.1.42 16155.25480 -0.0288125 0.0041500

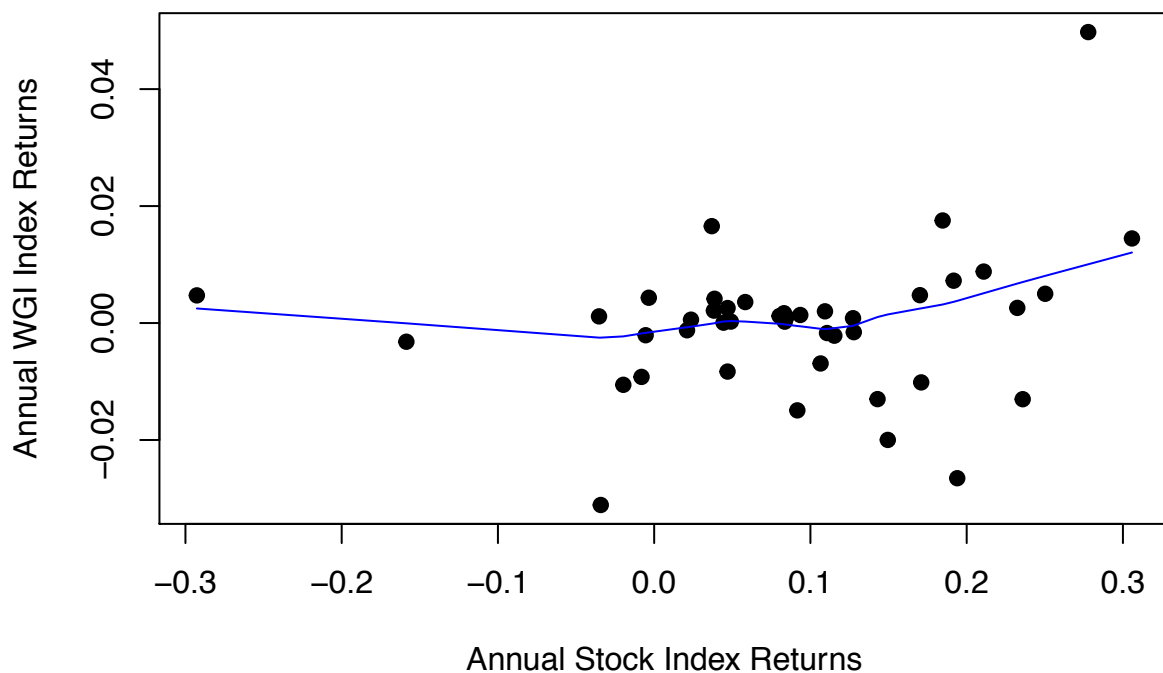
Creating an exploratory scatterplot for each of the ESG Index Returns vs. Stock Index Returns

Annual Stock Index Returns vs. EPI Index Returns



[1] 0.2959137

Annual Stock Index Returns vs. WGI Index Returns



[1] 0.2273535

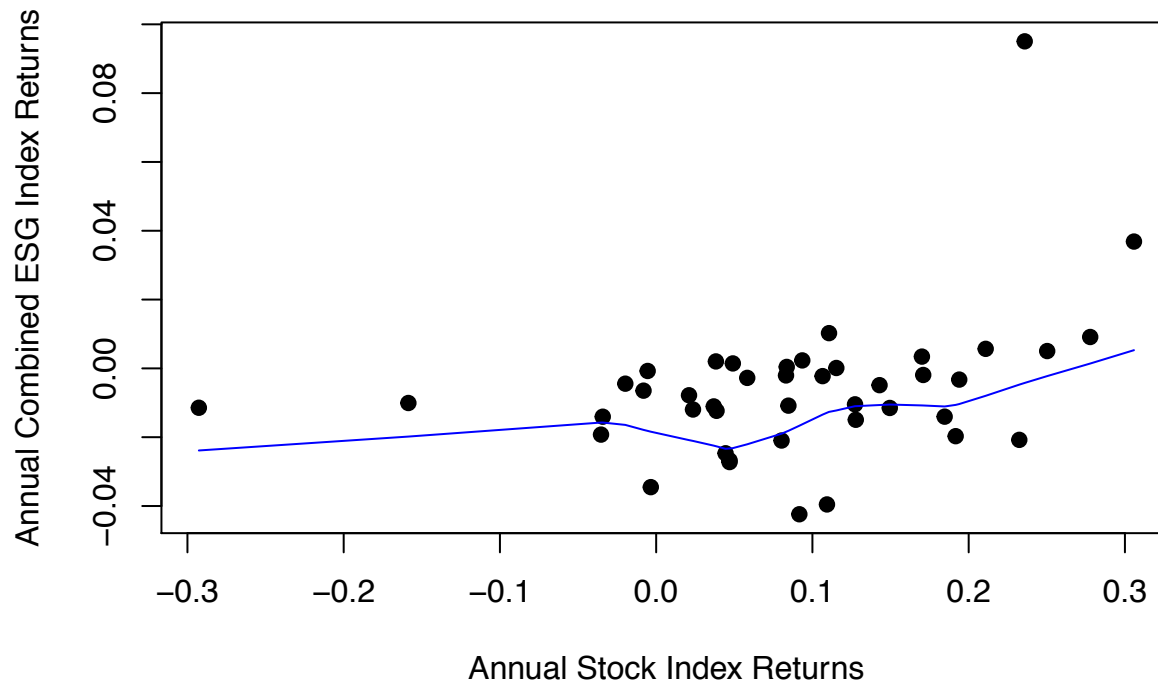
Finally, I am combining the EPI Index Returns and WGI Index Returns. I am assigning equal weights to each Index Return.

State Combined ESG Score 2004 - 2012 Annual Return				
TS.1	Argentina	34.175		0.191682464
TS.1.1	Australia	71.000		0.044403219
TS.1.2	Austria	71.555		0.080249765
TS.1.3	Belgium	69.850		0.023570483
TS.1.4	Brazil	52.805		0.170078297
TS.1.5	Canada	80.230		0.058284548
TS.1.6	China	35.910		-0.158594950
TS.1.7	Colombia	58.180		0.305796891
TS.1.8	Croatia	66.950		0.110622054
TS.1.9	Cyprus	66.035		-0.292697468
TS.1.10	Czech Republic	54.180		-0.003441554
TS.1.11	Denmark	85.460		0.115310042
TS.1.12	Egypt	47.050		0.193973598
TS.1.13	Finland	78.445		0.127766523
TS.1.14	France	72.545		0.021014983
TS.1.15	Germany	81.980		0.083101403
TS.1.16	Greece	65.395		-0.034181914
TS.1.17	Hungary	49.770		0.091626207
TS.1.18	Iceland	69.125		0.046972540
TS.1.19	India	60.155		0.235873599
TS.1.20	Indonesia	35.085		0.277787503
TS.1.21	Ireland	82.135		-0.005447842
TS.1.22	Israel	51.745		0.046972540
TS.1.23	Italy	70.015		-0.019749303
TS.1.24	Japan	66.775		-0.035298438
TS.1.25	Korea, Republic of	67.075		0.093503588
TS.1.26	Mauritius	56.350		0.232405615
TS.1.27	Mexico	51.900		0.170910289
TS.1.28	Netherlands	85.840		0.038233037
TS.1.29	New Zealand	79.640		0.127269257
TS.1.30	Norway	61.885		0.109319810
TS.1.31	Philippines	33.765		0.184631216
TS.1.32	Saudi Arabia	44.465		0.036867149
TS.1.33	Slovenia	76.190		0.106508313
TS.1.34	South Africa	60.005		0.142949268
TS.1.35	Spain	75.560		-0.008100577
TS.1.36	Sweden	87.605		0.083556419
TS.1.37	Switzerland	83.950		0.084637839
TS.1.38	Thailand	48.150		0.149524530
TS.1.39	Turkey	51.905		0.250253087
TS.1.40	Ukraine	39.085		0.210891629
TS.1.41	United Kingdom	81.900		0.049072313
TS.1.42	United States	68.045		0.038628332
2012 GDP epi.annual wgi.annual Combined ESG Index Return				
TS.1	609.56919	-0.0466375	0.0072375	-0.01970000
TS.1.1	1574.80056	-0.0494000	0.0000625	-0.02466875
TS.1.2	407.37303	-0.0431375	0.0012000	-0.02096875
TS.1.3	497.78001	-0.0244750	0.0005750	-0.01195000
TS.1.4	2413.17481	0.0020875	0.0047625	0.00342500

TS.1.5	1832.71560	-0.0091000	0.0035875	-0.00275625
TS.1.6	8471.42593	-0.0169250	-0.0032000	-0.01006250
TS.1.7	369.65970	0.0592625	0.0144625	0.03686250
TS.1.8	56.48538	0.0222000	-0.0017125	0.01024375
TS.1.9	25.01485	-0.0276125	0.0047250	-0.01144375
TS.1.10	206.44158	-0.0733500	0.0043250	-0.03451250
TS.1.11	325.01216	0.0023875	-0.0021625	0.00011250
TS.1.12	260.15270	0.0200250	-0.0265375	-0.00325625
TS.1.13	256.70647	-0.0283125	-0.0015625	-0.01493750
TS.1.14	2681.41611	-0.0143875	-0.0012375	-0.00781250
TS.1.15	3539.61538	-0.0057750	0.0016750	-0.00205000
TS.1.16	245.67067	0.0030250	-0.0311125	-0.01404375
TS.1.17	127.17618	-0.0698500	-0.0149375	-0.04239375
TS.1.18	14.19452	-0.0451500	-0.0083000	-0.02672500
TS.1.19	1869.20975	0.2031250	-0.0130250	0.09505000
TS.1.20	917.86991	-0.0315000	0.0497500	0.00912500
TS.1.21	224.65070	0.0005875	-0.0020875	-0.00075000
TS.1.22	259.61200	-0.0570250	0.0025625	-0.02723125
TS.1.23	2074.63156	0.0016750	-0.0105625	-0.00444375
TS.1.24	5957.25012	-0.0396250	0.0011375	-0.01924375
TS.1.25	1222.80726	0.0032625	0.0013750	0.00231875
TS.1.26	11.44207	-0.0441250	0.0025875	-0.02076875
TS.1.27	1184.50359	0.0063250	-0.0101500	-0.00191250
TS.1.28	828.94681	0.0019125	0.0021250	0.00201875
TS.1.29	176.61661	-0.0217250	0.0008250	-0.01045000
TS.1.30	509.70486	-0.0810875	0.0020000	-0.03954375
TS.1.31	250.24006	-0.0456000	0.0175375	-0.01403125
TS.1.32	733.95573	-0.0386625	0.0165625	-0.01105000
TS.1.33	46.23999	0.0024125	-0.0069125	-0.00225000
TS.1.34	397.38824	0.0032625	-0.0130125	-0.00487500
TS.1.35	1339.94677	-0.0037375	-0.0092125	-0.00647500
TS.1.36	543.88065	0.0006125	0.0002375	0.00042500
TS.1.37	665.40830	-0.0226875	0.0010250	-0.01083125
TS.1.38	397.47188	-0.0030250	-0.0199875	-0.01150625
TS.1.39	788.86289	0.0050750	0.0050000	0.00503750
TS.1.40	182.59175	0.0025625	0.0088000	0.00568125
TS.1.41	2630.47298	0.0026375	0.0002500	0.00144375
TS.1.42	16155.25480	-0.0288125	0.0041500	-0.01233125

Creating an exploratory scatterplot for the Combined ESG Index Returns vs. Stock Index Returns

Annual Stock Index Returns vs. Combined ESG Index Returns



[1] 0.3720151

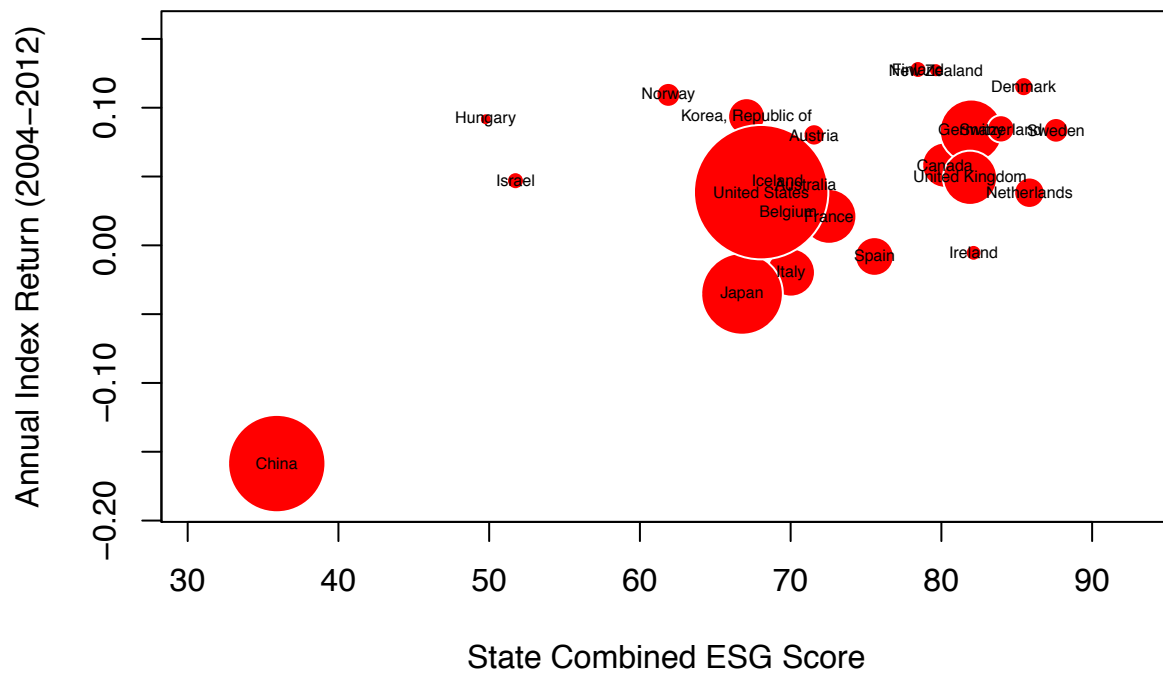
Creating a data frame for developed markets

	State	Combined ESG Score 2004 - 2012	Annual Return
TS.1	Australia	71.000	0.044403219
TS.1.1	Austria	71.555	0.080249765
TS.1.2	Belgium	69.850	0.023570483
TS.1.3	Canada	80.230	0.058284548
TS.1.4	China	35.910	-0.158594950
TS.1.5	Denmark	85.460	0.115310042
TS.1.6	Finland	78.445	0.127766523
TS.1.7	France	72.545	0.021014983
TS.1.8	Germany	81.980	0.083101403
TS.1.9	Hungary	49.770	0.091626207
TS.1.10	Iceland	69.125	0.046972540
TS.1.11	Ireland	82.135	-0.005447842
TS.1.12	Israel	51.745	0.046972540
TS.1.13	Italy	70.015	-0.019749303
TS.1.14	Japan	66.775	-0.035298438
TS.1.15	Korea, Republic of	67.075	0.093503588
TS.1.16	Netherlands	85.840	0.038233037
TS.1.17	New Zealand	79.640	0.127269257
TS.1.18	Norway	61.885	0.109319810
TS.1.19	Spain	75.560	-0.008100577
TS.1.20	Sweden	87.605	0.083556419
TS.1.21	Switzerland	83.950	0.084637839
TS.1.22	United Kingdom	81.900	0.049072313
TS.1.23	United States	68.045	0.038628332
2012 GDP			


```

TS.1      1574.80056
TS.1.1    407.37303
TS.1.2    497.78001
TS.1.3    1832.71560
TS.1.4    8471.42593
TS.1.5    325.01216
TS.1.6    256.70647
TS.1.7    2681.41611
TS.1.8    3539.61538
TS.1.9    127.17618
TS.1.10   14.19452
TS.1.11   224.65070
TS.1.12   259.61200
TS.1.13   2074.63156
TS.1.14   5957.25012
TS.1.15   1222.80726
TS.1.16   828.94681
TS.1.17   176.61661
TS.1.18   509.70486
TS.1.19   1339.94677
TS.1.20   543.88065
TS.1.21   665.40830
TS.1.22   2630.47298
TS.1.23   16155.25480

```



Call:

```
lm(formula = dev.esg.ret.final$`Combined ESG Score` ~ dev.esg.ret.final$`2004 - 2012 Annual Return`)
```

Residuals:

Min	1Q	Median	3Q	Max
-26.526	-3.243	1.472	7.458	15.254

```

Coefficients:
                                Estimate Std. Error t value
(Intercept)                    67.409      2.887   23.350
dev.esg.ret.final$`2004 - 2012 Annual Return` 96.993      37.087    2.615
                                Pr(>|t|)
(Intercept)                    <2e-16 ***
dev.esg.ret.final$`2004 - 2012 Annual Return` 0.0158 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

```

Residual standard error: 11.23 on 22 degrees of freedom
Multiple R-squared:  0.2372,    Adjusted R-squared:  0.2025
F-statistic:  6.84 on 1 and 22 DF,  p-value: 0.0158

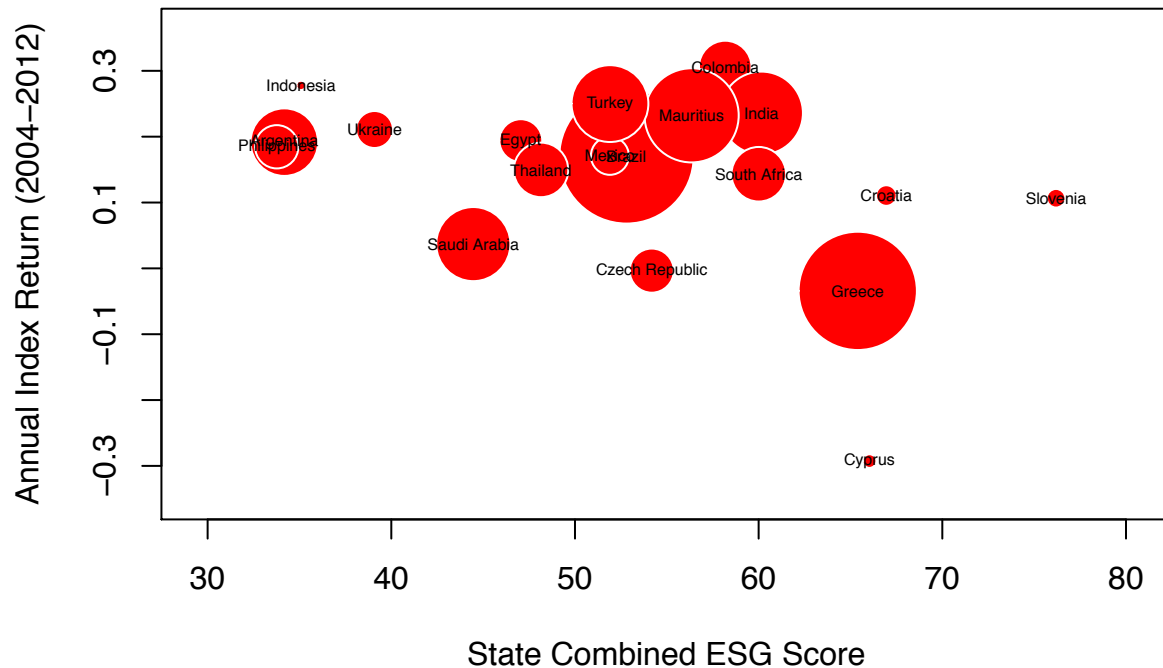
```

```
[1] 0.4869961
```

Creating a data frame for emerging markets

	State	Combined ESG Score	2004 - 2012 Annual Return
TS.1	Argentina	34.175	0.191682464
TS.1.1	Brazil	52.805	0.170078297
TS.1.2	Colombia	58.180	0.305796891
TS.1.3	Croatia	66.950	0.110622054
TS.1.4	Cyprus	66.035	-0.292697468
TS.1.5	Czech Republic	54.180	-0.003441554
TS.1.6	Egypt	47.050	0.193973598
TS.1.7	Greece	65.395	-0.034181914
TS.1.8	India	60.155	0.235873599
TS.1.9	Indonesia	35.085	0.277787503
TS.1.10	Mauritius	56.350	0.232405615
TS.1.11	Mexico	51.900	0.170910289
TS.1.12	Philippines	33.765	0.184631216
TS.1.13	Saudi Arabia	44.465	0.036867149
TS.1.14	Slovenia	76.190	0.106508313
TS.1.15	South Africa	60.005	0.142949268
TS.1.16	Thailand	48.150	0.149524530
TS.1.17	Turkey	51.905	0.250253087
TS.1.18	Ukraine	39.085	0.210891629
2012 GDP			
TS.1		609.56919	
TS.1.1		2413.17481	
TS.1.2		369.65970	
TS.1.3		56.48538	
TS.1.4		25.01485	
TS.1.5		260.15270	
TS.1.6		245.67067	
TS.1.7		1869.20975	
TS.1.8		917.86991	
TS.1.9		11.44207	
TS.1.10		1184.50359	
TS.1.11		192.80582	
TS.1.12		250.24006	
TS.1.13		733.95573	
TS.1.14		46.23999	
TS.1.15		397.38824	

```
TS.1.16 397.47188
TS.1.17 788.86289
TS.1.18 182.59175
```



```
Call:
lm(formula = em.esg.ret.final$`Combined ESG Score` ~ em.esg.ret.final$`2004 - 2012 Annual Return`)
```

```
Residuals:
    Min       1Q   Median       3Q      Max
-17.3296  -7.6353   0.3147   7.1918  22.3014
```

```
Coefficients:
              Estimate Std. Error t value
(Intercept)      57.698      3.699  15.600
em.esg.ret.final$`2004 - 2012 Annual Return`  -35.764     19.152  -1.867
Pr(>|t|)
(Intercept)      1.66e-11 ***
em.esg.ret.final$`2004 - 2012 Annual Return`    0.0792 .
---
```

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

```
Residual standard error: 11.19 on 17 degrees of freedom
Multiple R-squared:  0.1702,    Adjusted R-squared:  0.1214
F-statistic: 3.487 on 1 and 17 DF,  p-value: 0.07918
```

```
[1] -0.4125721
```