Pillars of Prosperity

The Political Economics of Development Clusters

A TEN YEAR UPDATE

Chapter 8: Lessons Learned

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Outline

1. Introduction
2. Pillars of Prosperity Index 2006
3. Pillars of Prosperity Index 2016
4. Inertia
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Introduction

- Here we reassemble the charts and tables from Chapter 8 of Pillars, comparing the main correlations with our new *Pillars 2.dta*.
- This chapter is primarily concerned with developing a general 'Pillars of Prosperity Index' to try and bridge the theory and data.
  1. We first recreate the original Pillars of Prosperity Index for 2006 in the book using our new data and include collective capacity, as this did not originally feature in Pillars.
  2. We then create the index for 2016 to track the general changes in the prosperity of nations over a decade.
- As a final exercise, we perform a few extensions at the end:
  1. Correlate the index with civic values.
  2. Perform cluster analysis to identify 'state spaces' using the components of the index.
  3. Correlate predicted state spaces with civic values.
  4. Correlate the Pillars index with life satisfaction.

Recreating the Index

- As per Pillars, the index is developed from three core components:
  1. *State capacity index* – we take the average of income tax in total tax revenue for 2006, contract enforcement index from the Doing Business Project for 2006, and the collective capacity index for 2005.
  2. *Peacefulness* – we take the average years in repression (with no civil war) 1975-2006, r_i, and average years in civil war 1975-2006, c_i, giving double weight to civil war:

$$p_{i,2006} = 1 - \frac{r_i}{2} - c_i$$

  3. *Income* – use log GDP per capita (normalised using min-max normalisation) for 2006.
- We then average across all three components to generate the overall index.
  - Where data is only available for two of the three subcomponents, we simply average over these two variables.

Country	Index Value	Peacefulness	State Capacity Index	Income
Zaire (DRC)	0.121	N/A	0.212	0.030
Afghanistan	0.131	0.097	0.166	N/A
Chad	0.175	0.323	0.017	0.184
Ethiopia	0.194	0.129	0.371	0.083
Mozambique	0.204	0.468	0.068	0.076
Sudan	0.208	0.195	0.073	0.356
Myanmar (Burma)	0.238	0.032	0.394	0.288
India	0.250	0.049	0.346	0.354
Cambodia	0.258	0.307	0.219	0.247
Uganda	0.259	0.146	0.437	0.193
Burundi	0.267	0.516	0.214	0.070
Angola	0.271	0.129	0.237	0.448
Philippines	0.291	0.000	0.465	0.408
Liberia	0.297	0.630	0.261	0.000
Vietnam	0.311	N/A	0.267	0.355
Colombia	0.315	0.000	0.416	0.530
Sierra Leone	0.334	0.677	0.174	0.151
Indonesia	0.349	0.226	0.352	0.469
Guatemala	0.350	0.339	0.264	0.448
Iraq	0.384	0.226	0.398	0.529
Central African Republic	0.402	0.984	0.128	0.094
Guinea-Bissau	0.403	0.920	0.116	0.174
Sri Lanka	0.404	0.290	0.453	0.470
Lebanon	0.414	0.516	0.150	0.577
Nepal	0.423	0.645	0.394	0.231

Country	Index Value	Peacefulness	State Capacity Index	Income
Rwanda	0.429	0.645	0.492	0.148
Peru	0.436	0.356	0.465	0.486
Mali	0.437	0.969	0.163	0.179
Burkina Faso	0.444	1.000	0.179	0.153
Niger	0.449	1.000	0.270	0.076
Zimbabwe	0.455	0.855	0.400	0.111
Turkey	0.463	0.242	0.517	0.630
Togo	0.471	1.000	0.260	0.152
Haiti	0.476	0.953	0.261	0.213
Morocco	0.477	0.548	0.448	0.434
Congo	0.478	0.903	0.110	0.421
Malawi	0.479	0.984	0.355	0.097
Djibouti	0.480	1.000	0.193	0.247
Benin	0.484	1.000	0.223	0.229
Laos	0.488	0.969	0.158	0.336
Cameroon	0.490	1.000	0.173	0.297
Algeria	0.492	0.468	0.439	0.570
El Salvador	0.497	0.565	0.481	0.447
Lesotho	0.502	0.984	0.272	0.250
Gambia	0.503	1.000	0.232	0.276
Guinea	0.507	1.000	0.306	0.213
Pakistan	0.509	0.903	0.243	0.381
Senegal	0.512	1.000	0.241	0.296
Bangladesh	0.530	0.984	0.346	0.261
Madagascar	0.532	1.000	0.393	0.203

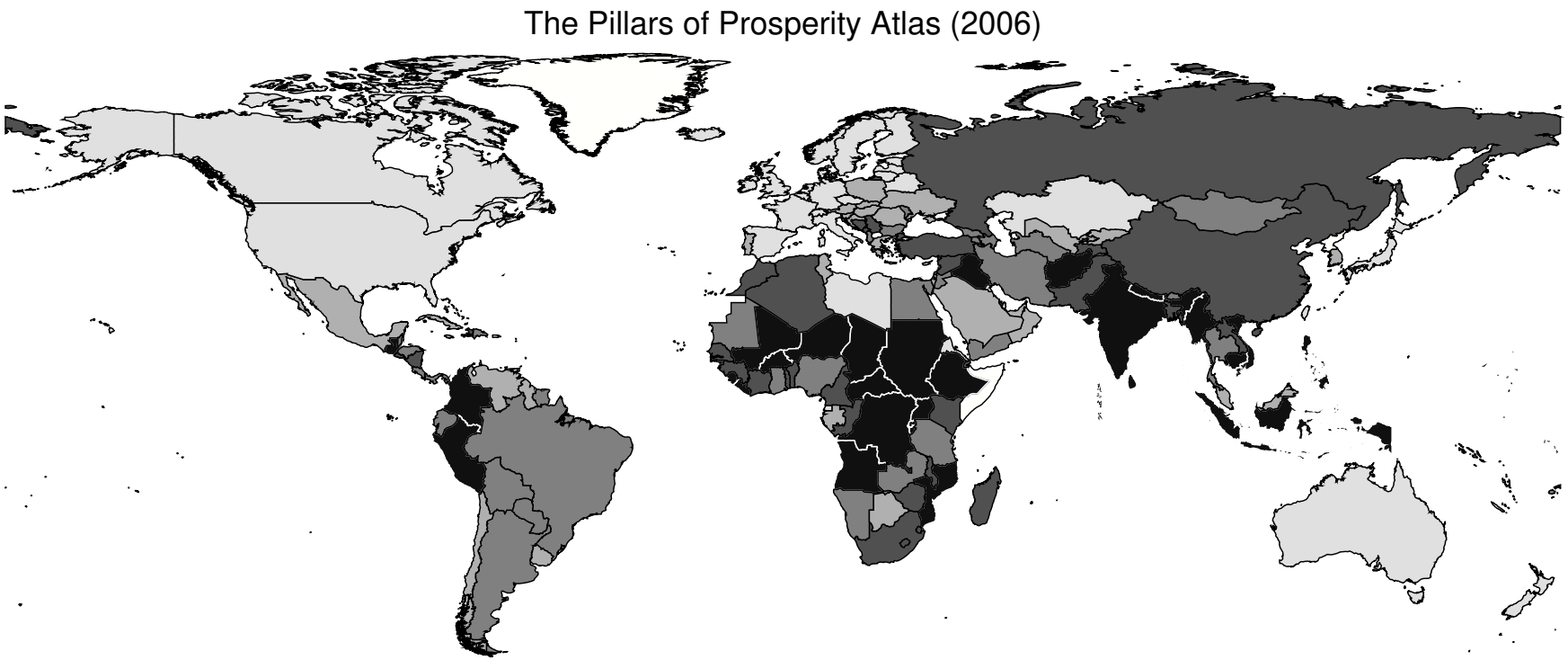
Country	Index Value	Peacefulness	State Capacity Index	Income
Syria	0.539	0.871	0.339	0.407
Ivory Coast	0.540	1.000	0.331	0.287
South Africa	0.543	0.581	0.502	0.547
Nicaragua	0.552	0.645	0.652	0.359
Kenya	0.553	0.969	0.415	0.276
Russia	0.561	0.502	0.516	0.667
Swaziland	0.563	1.000	0.228	0.461
China	0.563	0.828	0.404	0.457
Tajikistan	0.566	0.625	0.780	0.293
Paraguay	0.584	0.984	0.324	0.445
Bhutan	0.596	1.000	0.373	0.414
Zambia	0.596	0.984	0.521	0.283
Ecuador	0.602	0.953	0.343	0.509
Moldova	0.607	1.000	0.451	0.369
Honduras	0.609	0.984	0.483	0.360
Georgia	0.611	0.813	0.563	0.458
Mauritania	0.614	1.000	0.514	0.326
Tanzania	0.621	1.000	0.630	0.233
Nigeria	0.623	0.952	0.534	0.382
Ghana	0.630	0.969	0.584	0.337
Iran	0.631	0.533	0.745	0.615
Bolivia	0.634	1.000	0.509	0.393
Albania	0.635	0.969	0.452	0.483
Dominican Republic	0.635	1.000	0.378	0.527
Azerbaijan	0.642	0.734	0.645	0.548

Country	Index Value	Peacefulness	State Capacity Index	Income
Jordan	0.645	1.000	0.399	0.535
Egypt	0.649	1.000	0.435	0.510
Mongolia	0.650	0.984	0.499	0.466
Costa Rica	0.658	1.000	0.426	0.548
Brazil	0.659	1.000	0.406	0.571
Argentina	0.659	0.935	0.447	0.594
Thailand	0.660	0.984	0.436	0.558
Turkmenistan	0.660	1.000	0.445	0.534
Panama	0.662	1.000	0.415	0.571
Fiji	0.665	1.000	0.523	0.472
Mauritius	0.667	1.000	0.416	0.586
Namibia	0.677	1.000	0.553	0.476
Armenia	0.678	1.000	0.545	0.489
Bulgaria	0.684	0.969	0.508	0.576
Chile	0.688	0.953	0.483	0.628
Jamaica	0.693	0.984	0.622	0.472
Uruguay	0.694	0.984	0.522	0.575
Venezuela	0.694	1.000	0.461	0.622
Tunisia	0.700	1.000	0.579	0.521
Romania	0.703	0.953	0.549	0.607
Botswana	0.707	1.000	0.561	0.560
Cuba	0.709	0.984	0.433	N/A
Kyrgyzstan	0.710	1.000	0.786	0.345
Trinidad Tobago	0.710	1.000	0.408	0.723
Ukraine	0.715	1.000	0.622	0.524

Country	Index Value	Peacefulness	State Capacity Index	Income
Slovak Republic	0.717	1.000	0.503	0.648
Slovenia	0.722	1.000	0.465	0.700
Israel	0.724	1.000	0.467	0.704
Gabon	0.726	1.000	0.561	0.616
Oman	0.738	1.000	0.422	0.792
Croatia	0.738	1.000	0.560	0.655
Mexico	0.744	1.000	0.620	0.610
Uzbekistan	0.746	1.000	0.832	0.406
Poland	0.748	0.969	0.643	0.634
Saudi Arabia	0.751	1.000	0.445	0.807
Guyana	0.758	1.000	0.516	N/A
Malaysia	0.761	1.000	0.652	0.630
South Korea	0.763	0.922	0.662	0.706
Portugal	0.765	1.000	0.602	0.693
Cyprus	0.766	1.000	0.583	0.716
Austria	0.773	N/A	0.769	0.777
Hungary	0.779	0.969	0.701	0.667
Papua New Guinea	0.786	1.000	0.572	N/A
Greece	0.789	0.984	0.672	0.711
Czech Republic	0.790	1.000	0.674	0.697
Belarus	0.793	1.000	0.798	0.582
Taiwan	0.795	1.000	0.647	0.738
Latvia	0.800	1.000	0.757	0.642
Estonia	0.802	1.000	0.727	0.679
Libya	0.804	0.969	0.638	N/A

Country	Index Value	Peacefulness	State Capacity Index	Income
Eritrea	0.820	0.969	0.671	N/A
Spain	0.820	0.984	0.737	0.739
Lithuania	0.823	1.000	0.831	0.637
Germany	0.823	N/A	0.870	0.775
Kazakhstan	0.825	1.000	0.850	0.627
France	0.831	1.000	0.733	0.759
Kuwait	0.835	1.000	0.572	0.933
Netherlands	0.841	1.000	0.734	0.790
Japan	0.848	1.000	0.786	0.759
Italy	0.857	1.000	0.809	0.763
United Kingdom	0.861	1.000	0.825	0.758
Belgium	0.871	0.984	0.863	0.764
New Zealand	0.874	1.000	0.892	0.731
United States	0.875	0.839	0.971	0.817
Ireland	0.877	1.000	0.809	0.821
Finland	0.878	1.000	0.864	0.770
Australia	0.883	1.000	0.856	0.793
Bahrain	0.887	1.000	N/A	0.775
Singapore	0.897	1.000	0.873	0.819
Sweden	0.899	1.000	0.916	0.782
Canada	0.899	1.000	0.914	0.783
Switzerland	0.908	1.000	0.880	0.843
Denmark	0.916	1.000	0.948	0.802
Norway	0.917	1.000	0.848	0.903

Pillars of Prosperity Atlas, 2006



Predicting the Pillars of Prosperity Index, 2006

- The following table correlates the Pillars index, alongside the three subindices, with our key variables used throughout the book: prop. of years in external war, executive constraints, openness of executive recruitment, ethnic homogeneity and legal origins.
- To obtain the 'predicted' overall index, we simply take the fitted values from column 1 of the table in the next slide.
- Ranking the fitted values and comparing to the ranks from the raw values of the index identifies under- and over-performers in light of the theoretical framework developed in the book.

Predicting the Pillars of Prosperity Index, 2006 – Table

	Index value	State-capacity subindex	Income per capita	Peacefulness subindex
	(1)	(2)	(3)	(4)
Prevalence external war before 2000	0.196	0.582***	0.358**	-.224
	(0.125)	(0.173)	(0.16)	(0.273)
Average exec. constraints before 2000	0.278***	0.311***	0.419***	0.105
	(0.064)	(0.071)	(0.069)	(0.1)
Average nonopen exec. recruitment before 2000	0.162**	0.159**	0.322***	0.021
	(0.078)	(0.068)	(0.099)	(0.128)
Ethnic homogeneity	0.197***	0.145**	0.223***	0.205**
	(0.059)	(0.059)	(0.066)	(0.101)
English legal origin	0.041	0.047	-.017	0.056
	(0.035)	(0.037)	(0.04)	(0.058)
Scandinavian legal origin	0.165***	0.306***	0.115**	0.08
	(0.039)	(0.052)	(0.046)	(0.061)
German legal origin	0.132***	0.223***	0.138**	0.098*
	(0.042)	(0.042)	(0.056)	(0.056)
Socialist legal origin	0.049	0.098**	0.001	0.053
	(0.036)	(0.042)	(0.033)	(0.058)
Observations	149	149	143	148
R-squared	0.387	0.48	0.492	0.075

Table: Largest Underperformers (more than 50 steps off in ranking)

Country	Actual Rank	Predicted Rank	Actual minus predicted index
India	8	99	-0.406
Ethiopia	4	64	-0.386
Vietnam	15	106	-0.360
Myanmar	7	72	-0.349
Cambodia	9	77	-0.344
Philippines	13	88	-0.337
Burundi	11	63	-0.313
Sri Lanka	23	113	-0.283
Zimbabwe	31	102	-0.205
Turkey	32	100	-0.194
Moldova	64	128	-0.133
China	58	110	-0.120
Russia	56	107	-0.110

Note: countries that are italicised were also predicted as underperformers using the old index in Pillars without collective capacity.

Table: Largest Overperformers (more than 50 steps off in ranking)

Country	Actual Rank	Predicted Rank	Actual minus predicted index
Nigeria	69	17	0.155
Bolivia	72	18	0.159
Venezuela	93	41	0.165
Ghana	70	12	0.175
Mexico	107	36	0.226
Uzbekistan	108	35	0.229
Kazakhstan	130	52	0.279
Kuwait	132	50	0.290
Eritrea	126	37	0.296
Singapore	144	75	0.300
Bahrain	143	61	0.312
Gabon	104	3	0.316

Note: countries that are italicised were also predicted as overperformers using the old index in Pillars without collective capacity.

Pillars of Prosperity Index 2016

- Now we recreate the index for 2016, using observations up to 2016 across the state capacity index, peacefulness and income.
  - Due to data availability constraints, we use the latest values, 2010, from Barro and Lee's (2013) educational attainment data to generate the collective capacity component of the state capacity index.

Country	Index Value	Peacefulness	State Capacity	Income
Afghanistan	0.121	0.071	0.170	N/A
Chad	0.228	0.286	0.209	0.188
Sudan	0.263	0.167	0.273	0.349
Mozambique	0.271	0.595	0.119	0.098
Angola	0.282	0.381	0.016	0.449
Uganda	0.289	0.179	0.489	0.201
Burundi	0.293	0.667	0.176	0.035
India	0.295	0.179	0.286	0.422
Zaire	0.302	0.738	0.131	0.036
Philippines	0.304	0.000	0.460	0.453
Colombia	0.313	0.000	0.373	0.566
Cambodia	0.336	0.440	0.265	0.302
Central African Republic	0.340	0.988	0.032	0.000
Liberia	0.377	0.893	0.173	0.063
Myanmar	0.387	0.571	0.197	0.393
Niger	0.396	0.988	0.138	0.063
Sierra Leone	0.397	0.738	0.297	0.157
Nepal	0.403	0.738	0.221	0.249
Guinea-Bissau	0.409	0.964	0.107	0.157
Iraq	0.425	0.262	0.417	0.597
Burkina Faso	0.432	1.000	0.139	0.157
Rwanda	0.435	0.619	0.487	0.197
Yemen	0.439	0.786	0.318	0.212
Madagascar	0.441	0.988	0.171	0.163
Mali	0.447	0.964	0.134	0.245

Country	Index Value	Peacefulness	State Capacity	Income
Togo	0.449	0.988	0.202	0.156
Ethiopia	0.454	0.536	0.652	0.175
Somalia	0.457	0.476	0.439	N/A
Pakistan	0.460	0.690	0.307	0.382
Turkey	0.469	0.226	0.505	0.675
Sri Lanka	0.470	0.452	0.413	0.544
Benin	0.472	1.000	0.187	0.228
Syria	0.473	0.762	0.389	0.267
Zimbabwe	0.477	0.845	0.384	0.201
Algeria	0.491	0.369	0.529	0.575
Congo	0.492	0.905	0.182	0.389
Djibouti	0.496	1.000	0.198	0.290
Haiti	0.498	0.964	0.342	0.186
Cameroon	0.500	0.988	0.216	0.295
Senegal	0.503	0.988	0.235	0.286
Malawi	0.505	0.988	0.429	0.098
Lesotho	0.511	0.988	0.274	0.271
Ivory Coast	0.511	0.964	0.269	0.301
El Salvador	0.514	0.679	0.419	0.443
Morocco	0.515	0.643	0.432	0.470
Peru	0.516	0.536	0.472	0.539
Indonesia	0.517	0.667	0.361	0.524
Gambia	0.518	0.976	0.332	0.246
Guinea	0.527	1.000	0.358	0.222
Laos	0.531	0.976	0.183	0.435

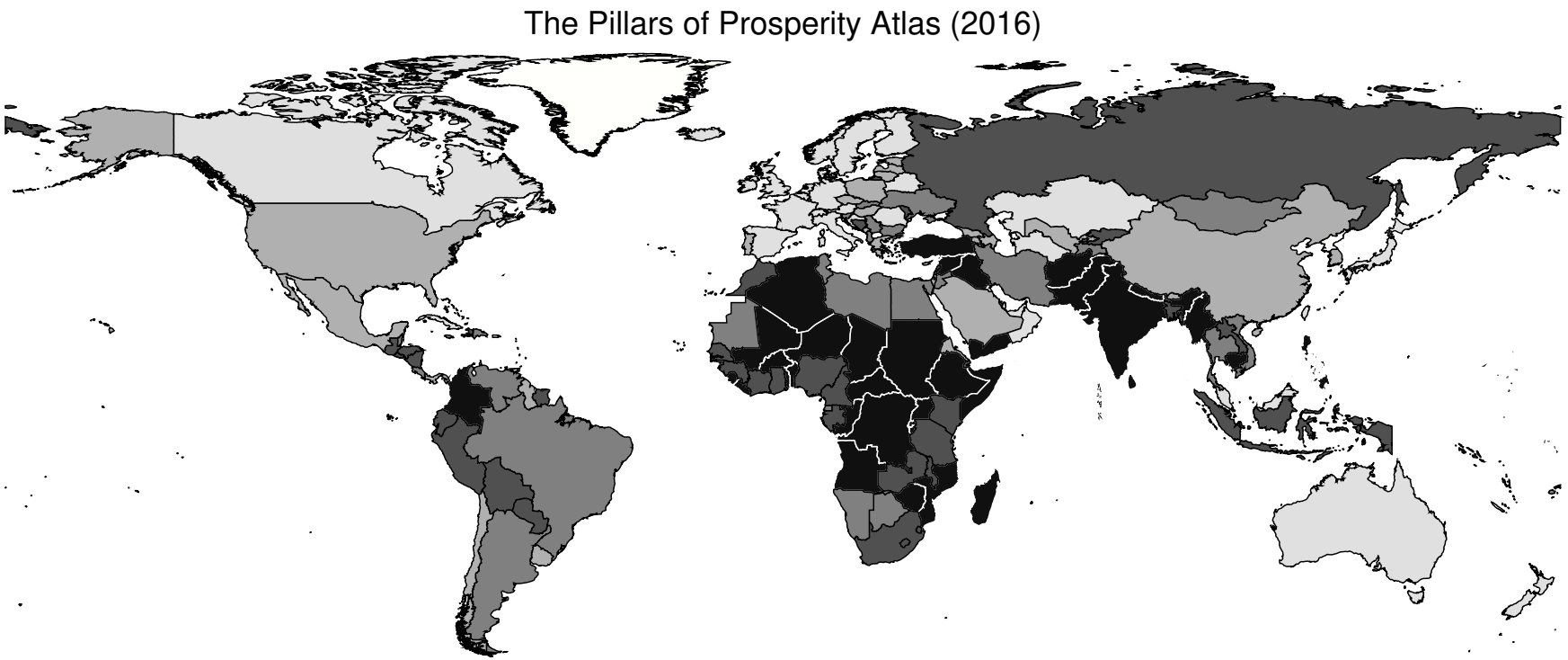
Country	Index Value	Peacefulness	State Capacity	Income
Kyrgyzstan	0.534	0.988	0.239	0.374
Bangladesh	0.539	0.952	0.347	0.318
Zambia	0.541	0.976	0.334	0.313
Papua New Guinea	0.543	1.000	0.086	N/A
Nicaragua	0.556	0.714	0.571	0.384
Lebanon	0.560	0.821	0.289	0.571
Gabon	0.562	1.000	0.075	0.611
Guatemala	0.572	0.988	0.278	0.449
Honduras	0.575	0.976	0.392	0.357
Kenya	0.582	0.964	0.495	0.287
Tanzania	0.588	0.976	0.528	0.260
South Africa	0.589	0.667	0.557	0.544
Swaziland	0.592	1.000	0.322	0.455
Nigeria	0.593	0.845	0.540	0.395
Ghana	0.594	0.976	0.427	0.379
Paraguay	0.596	0.988	0.316	0.484
Ecuador	0.609	0.964	0.344	0.519
Moldova	0.611	1.000	0.425	0.409
Russia	0.619	0.619	0.553	0.686
Bolivia	0.620	0.976	0.457	0.427
Tajikistan	0.620	0.821	0.706	0.333
Venezuela	0.621	0.964	0.336	0.564
Ukraine	0.628	0.917	0.483	0.485
Jordan	0.630	0.988	0.403	0.498
Botswana	0.631	1.000	0.305	0.587

Country	Index Value	Peacefulness	State Capacity	Income
Egypt	0.632	0.952	0.417	0.528
Mauritania	0.653	1.000	0.658	0.301
Jamaica	0.654	0.988	0.533	0.440
Dominican Republic	0.660	1.000	0.399	0.580
Brazil	0.664	0.988	0.431	0.574
Namibia	0.665	1.000	0.498	0.498
Iran	0.665	0.726	0.644	0.625
Thailand	0.669	0.976	0.440	0.590
Vietnam	0.673	0.988	0.615	0.416
Costa Rica	0.679	1.000	0.458	0.579
Slovenia	0.684	1.000	0.354	0.698
Argentina	0.685	1.000	0.454	0.600
Fiji	0.687	0.988	0.602	0.472
Libya	0.690	0.905	0.475	N/A
Mauritius	0.692	1.000	0.438	0.639
Albania	0.700	0.976	0.595	0.529
Mongolia	0.700	0.976	0.578	0.548
Trinidad & Tobago	0.703	1.000	0.397	0.712
Bahrain	0.703	0.940	0.396	0.773
Bulgaria	0.704	0.976	0.523	0.612
Tunisia	0.714	0.976	0.638	0.527
Slovak Republic	0.717	1.000	0.460	0.691
Panama	0.720	1.000	0.508	0.651
Armenia	0.727	0.988	0.671	0.522
Eritrea	0.733	0.976	0.489	N/A

Country	Index Value	Peacefulness	State Capacity	Income
Mexico	0.735	1.000	0.600	0.606
China	0.739	0.833	0.825	0.559
Israel	0.739	0.976	0.514	0.727
Greece	0.743	0.976	0.599	0.653
Hungary	0.747	0.976	0.591	0.674
Azerbaijan	0.748	0.869	0.767	0.606
Cyprus	0.749	1.000	0.555	0.693
Bhutan	0.765	1.000	0.802	0.493
Poland	0.767	0.976	0.638	0.686
Uzbekistan	0.768	1.000	0.807	0.497
Portugal	0.768	1.000	0.629	0.676
Uruguay	0.771	0.988	0.691	0.633
Guyana	0.781	1.000	0.562	N/A
Czech Republic	0.783	1.000	0.637	0.711
South Korea	0.789	0.917	0.699	0.749
Macedonia	0.789	1.000	0.578	N/A
Chile	0.796	0.964	0.766	0.657
Latvia	0.796	1.000	0.726	0.662
Lithuania	0.798	1.000	0.709	0.684
Estonia	0.803	1.000	0.719	0.688
Saudi Arabia	0.803	1.000	0.588	0.822
United States	0.804	0.619	0.970	0.824
Georgia	0.810	0.917	0.973	0.539
Malaysia	0.815	0.964	0.809	0.670
Romania	0.815	0.952	0.844	0.650

Country	Index Value	Peacefulness	State Capacity	Income
Spain	0.821	0.988	0.743	0.731
Oman	0.823	1.000	0.695	0.774
Belarus	0.829	0.988	0.877	0.622
Kuwait	0.829	0.988	0.628	0.871
France	0.831	1.000	0.735	0.757
Turkmenistan	0.831	1.000	N/A	0.662
Japan	0.834	1.000	0.740	0.762
Austria	0.836	1.000	0.728	0.781
Italy	0.844	1.000	0.788	0.744
Netherlands	0.844	1.000	0.738	0.796
Singapore	0.845	1.000	0.667	0.867
New Zealand	0.847	1.000	0.793	0.747
United Kingdom	0.847	1.000	0.783	0.758
Croatia	0.848	1.000	0.893	0.650
Belgium	0.858	0.988	0.819	0.765
Finland	0.859	1.000	0.817	0.761
Sweden	0.873	1.000	0.828	0.792
Kazakhstan	0.880	1.000	0.968	0.671
Germany	0.887	1.000	0.869	0.793
Denmark	0.890	1.000	0.870	0.799
Canada	0.890	1.000	0.884	0.787
Ireland	0.900	1.000	0.829	0.871
Taiwan	0.901	1.000	0.925	0.779
Cuba	0.906	0.964	0.848	N/A
Norway	0.910	1.000	0.825	0.904
Switzerland	0.910	1.000	0.880	0.850
Australia	0.920	1.000	0.952	0.807
United Arab Emirates	0.948	1.000	0.952	0.893

Pillars of Prosperity Atlas, 2016



Predicting the Pillars of Prosperity Index, 2016

	Index value	State-capacity subindex	Income per capita	Peacefulness subindex
	(1)	(2)	(3)	(4)
Prevalence external war before 2000	0.25**	0.631***	0.371**	-.263
	(0.117)	(0.209)	(0.171)	(0.269)
Average exec. constraints before 2010	0.242***	0.23***	0.435***	0.146*
	(0.064)	(0.083)	(0.073)	(0.085)
Average nonopen exec. recruitment before 2010	0.188**	0.21**	0.379***	0.081
	(0.085)	(0.097)	(0.103)	(0.114)
Ethnic homogeneity	0.183***	0.222***	0.2***	0.109
	(0.052)	(0.067)	(0.069)	(0.082)
English legal origin	0.052*	0.099***	0.018	0.018
	(0.03)	(0.038)	(0.04)	(0.049)
Scandinavian legal origin	0.168***	0.278***	0.141***	0.064
	(0.035)	(0.045)	(0.051)	(0.053)
German legal origin	0.174***	0.265***	0.162***	0.084*
	(0.048)	(0.074)	(0.06)	(0.047)
Socialist legal origin	0.102***	0.159***	0.046	0.07
	(0.034)	(0.051)	(0.034)	(0.043)
Observations	153	152	145	155
R-squared	0.431	0.44	0.484	0.078

Table: Largest Underperformers (more than 50 steps off in ranking)

Country	Actual Rank	Predicted Rank	Actual minus predicted index
Cambodia	12	107	-0.354
India	8	88	-0.348
Philippines	10	84	-0.330
Myanmar	15	85	-0.250
Yemen	23	102	-0.240
Turkey	30	101	-0.209
Sri Lanka	31	97	-0.197
Moldova	68	129	-0.149
Russia	69	124	-0.125
Slovenia	86	144	-0.121

Note: countries in red were also predicted as underperformers for the 2006 values of the index.

Table: Largest Overperformers (more than 50 steps off in ranking)

Country	Actual Rank	Predicted Rank	Actual minus predicted index
Gabon	57	4	0.128
Bolivia	70	15	0.133
Uruguay	112	59	0.187
Mexico	101	38	0.202
Oman	127	69	0.217
Turkmenistan	131	70	0.224
Eritrea	100	26	0.225
Chile	117	55	0.226
Singapore	136	64	0.253
Kuwait	129	57	0.255
Kazakhstan	143	67	0.276
Cuba	149	72	0.298
United Arab Emirates	153	86	0.306

Note: countries in red were also predicted as overperformers for the 2006 values of the index.

Inertia – Underperformers

- As per the previous two slides, many of the countries that were underperformers or overperformers on the Pillars index in 2006 remain underperformers and/or overperformers today.
- Interestingly, amongst the underperformers, China has moved out of this category since 2006, most likely due to its vast levels of economic growth despite continued repression.
- Amongst the major democratic backsliders, Russia and Turkey remain underperformers with the erosion of executive constraints and increased strictures surrounding political selection.

Inertia – Overperformers

- Amongst the overperformers, the persistence of weak executive constraints and a closed political system in terms of selection arguably drives the continued position of overperformers.
  - Singapore remains one of the largest overperformers, inevitably due to the continued dominance of the People's Action Party (PAP).
  - Kazakhstani elections have been plagued with blatant irregularities and hence have never been considered free and fair by conventional "Western" standards.
  - The oil state of Kuwait is an autocracy, run by a small "selectorate" (this also applies to Oman and the UAE as a new overperformer).

Table: Top 20 Best and Worst Performers, 2016

Country	Country
1. Zaire (DRC)	134. Italy
2. CAR	135. Taiwan
3. Togo	136. Latvia
4. Gabon	137. Lithuania
5. Ivory Coast	138. Czech Republic
6. Chad	139. Poland
7. Mali	140. Hungary
8. Cameroon	141. Australia
9. Congo	142. Netherlands
10. Lebanon	143. Switzerland
11. *Somalia*	144. Slovenia
12. Burkina Faso	145. South Korea
13. Guinea	146. Denmark
14. Benin	147. Norway
15. Bolivia	148. Finland
16. Uganda	149. Sweden
17. Peru	150. Austria
18. Ghana	151. Germany
19. Guatemala	152. United Kingdom
20. Madagascar	153. Japan

Note: the above rankings are based on the predicted index. Countries in red were also in the top and bottom 20 respectively using the 2006 index. Countries that are italicised lacked sufficient data for a ranking in 2006.

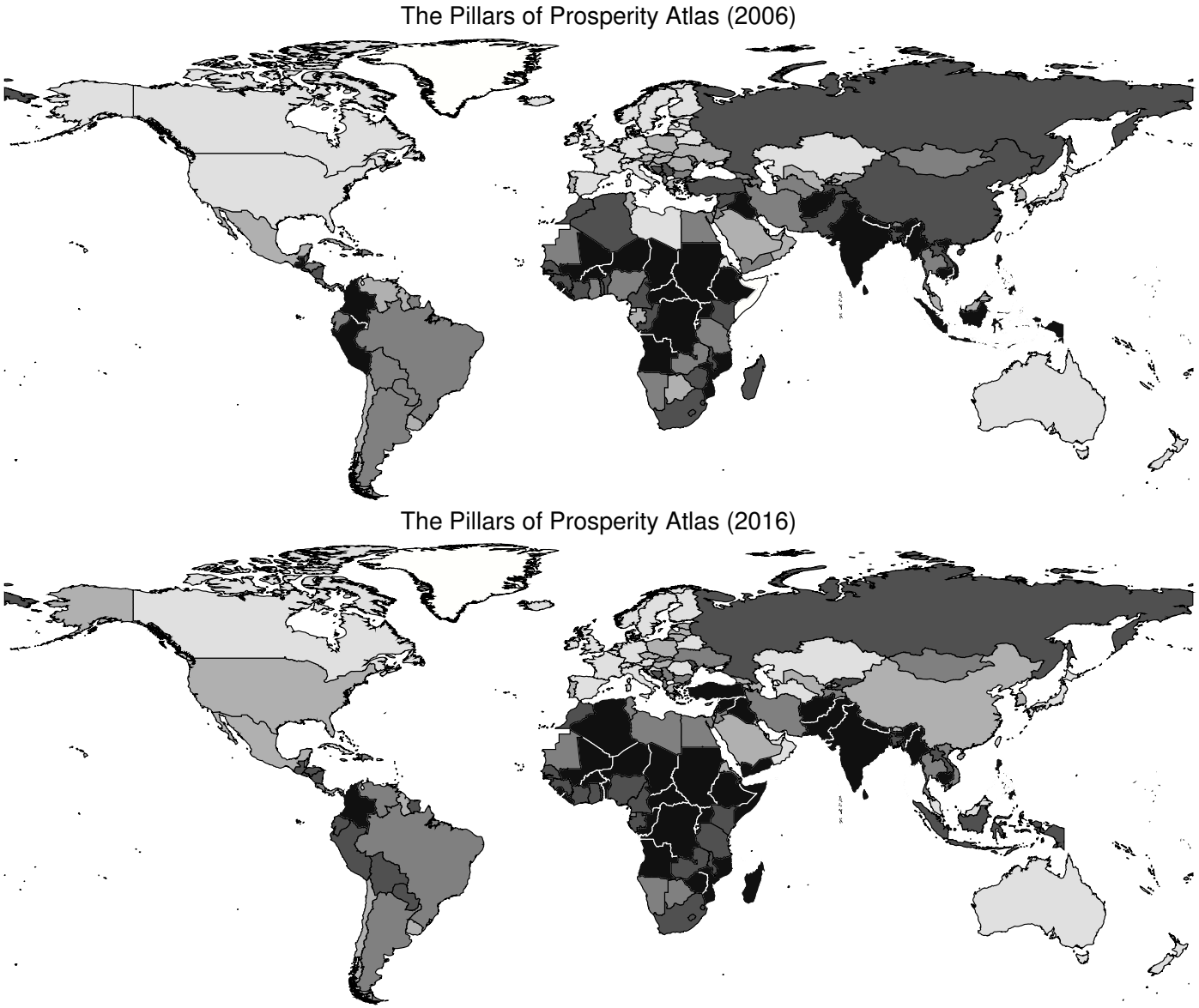
Inertia – Best and Worst Performers

- As per the previous slide, almost *all* countries that were the top or bottom 20 performers along the Pillars index in 2006, as predicted by parameters and variables of the theory, remain so ten years later.
  - Whilst a decade is obviously not a huge amount of time for countries to develop in the grand scheme of history, there is (unsurprisingly) clear persistence in the prosperity of countries.
- The inertia amongst the bottom 20 performers is clearly a manifestation of the "fragility trap" (see Commission on State Fragility, Growth and Development, 2018).

The Pillars of Prosperity Atlas

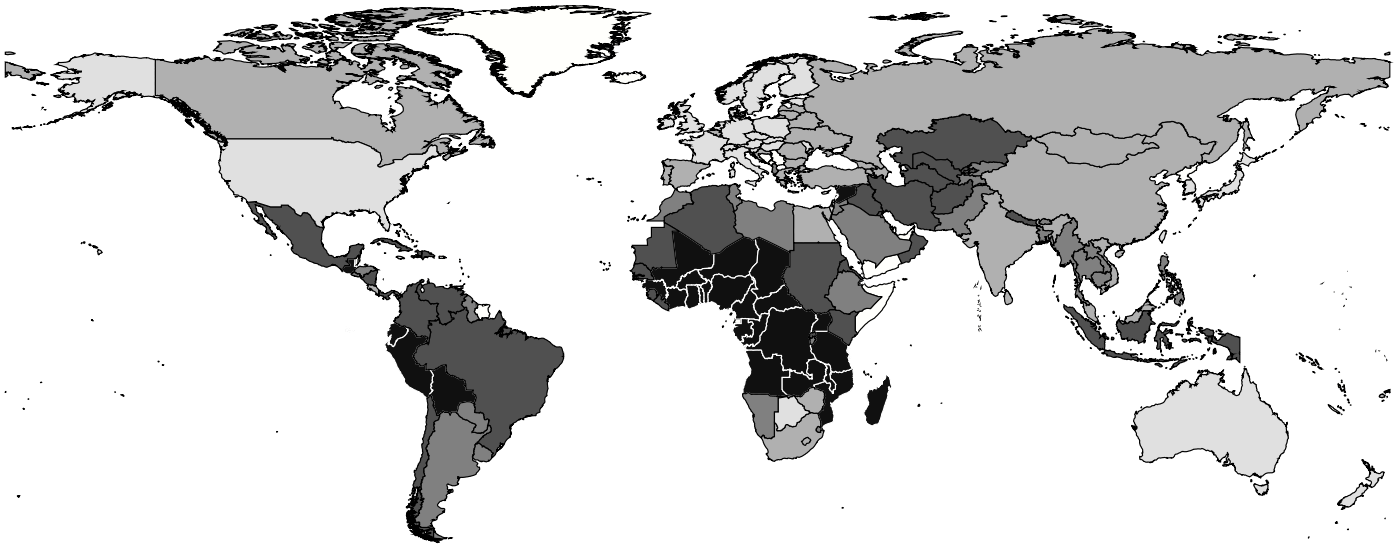
- In the next two slides, we visualise the raw and predicted Pillars indices via a global choropleth map by calculating quantiles, comparing the 2006 cross-section to 2016.
  - Darker coloured countries perform poorly on the index.
  - Lighter coloured countries perform better on the index.
  - White coloured countries means there is missing data.
- Again, we see general continuity in both the raw and predicted Pillars indexes over ten years.

Pillars of Prosperity Atlas Over a Decade

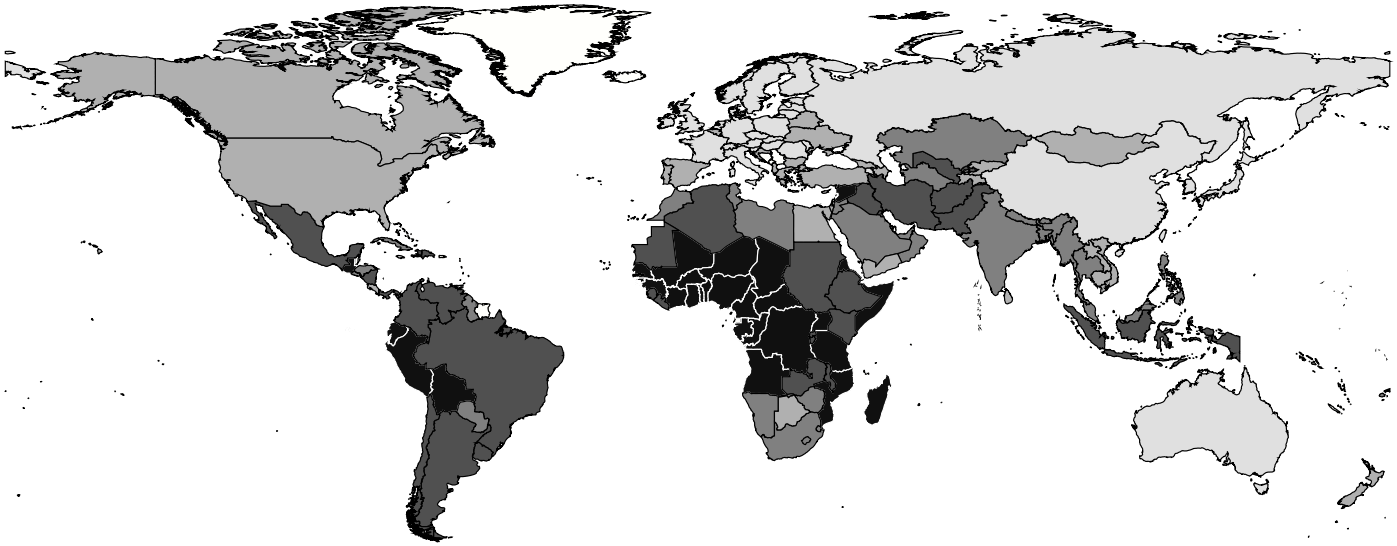


Predicted Pillars of Prosperity Atlas Over a Decade

The Predicted Pillars of Prosperity Index Atlas (2006)

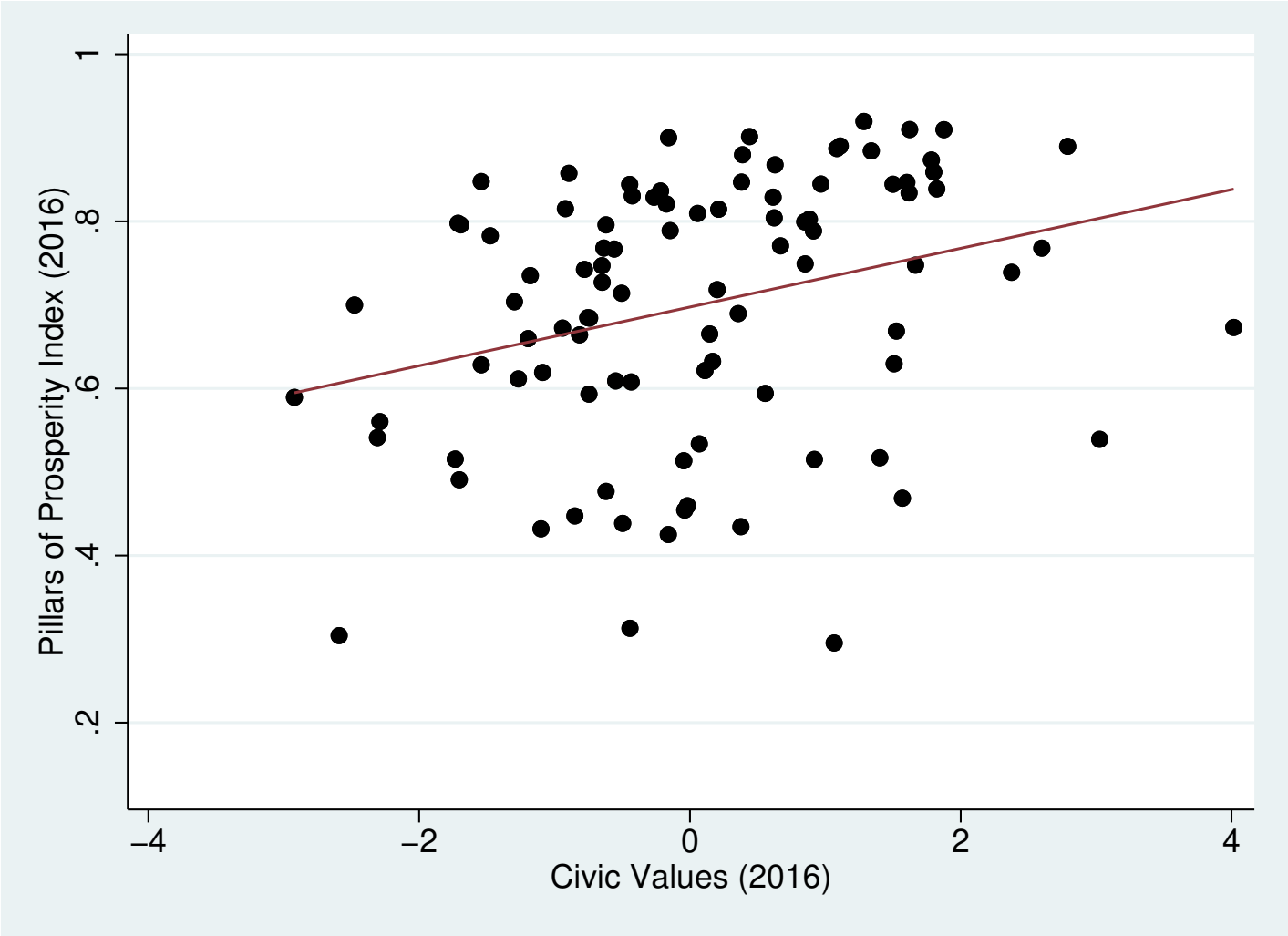


The Predicted Pillars of Prosperity Index Atlas (2016)



Extensions (I) – Values

- Once again, we can explore how cross-national attitudes covary with the Pillars of Prosperity Index for 2016.
- To measure 'civic culture', we now take the first principal component of the following variables:
  - Confidence in government
  - General trust in people
  - Unjustifiable to cheat on taxes
  - Confidence in the justice system/courts
  - Unjustifiable to accept bribes
- The factor loadings are 0.4235, 0.3495, 0.4763, 0.5005 and 0.4703 respectively.
  - So this variable is largely capturing whether people have confidence in government and the justice system, generally trust people, and do not think it is justifiable to cheat on taxes or accept bribes (i.e. "civic culture").



Pillars of Prosperity Index and Values

Values

- As per the previous chart, despite some noise, there is a definite positive association between citizens having more civic values and a country's Pillars index.
  - Haiti is removed as an extreme outlier (especially for the 'cheating on taxes' variable), but the trend line is robust to its inclusion.
- This is congruent with much of the literature on civic culture, and further underpins why strong values can complement institutions in furthering the development of nations.
- The table on the following slide, which repeats the previous regressions above but including this civic values variable, further exhibits this pattern, with civic values being significantly correlated with state capacity and the overall Pillars index itself.

Table: Pillars of Prosperity Index and Civic Values

	Index value	State-capacity subindex	Income per capita	Peacefulness subindex
	(1)	(2)	(3)	(4)
Prevalence external war before 2000	0.195	0.416***	0.335**	-.128
	(0.122)	(0.161)	(0.163)	(0.27)
Average exec. constraints before 2010	0.197***	0.197**	0.304***	0.077
	(0.069)	(0.096)	(0.082)	(0.095)
Average nonopen exec. recruitment before 2010	0.094	0.081	0.131	0.052
	(0.088)	(0.109)	(0.119)	(0.138)
Ethnic homogeneity	0.124*	0.126	0.083	0.161
	(0.071)	(0.088)	(0.087)	(0.116)
Civic values	0.014*	0.023**	0.017	0.002
	(0.009)	(0.011)	(0.012)	(0.016)
English legal origin	0.036	0.052	-.022	0.081
	(0.043)	(0.053)	(0.055)	(0.075)
Scandinavian legal origin	0.134***	0.183***	0.106*	0.124*
	(0.045)	(0.061)	(0.056)	(0.074)
German legal origin	0.152***	0.198***	0.13***	0.135**
	(0.047)	(0.07)	(0.047)	(0.063)
Socialist legal origin	0.096***	0.133**	0.01	0.144**
	(0.034)	(0.052)	(0.036)	(0.059)
Observations	89	89	87	89
R-squared	0.43	0.403	0.44	0.144

Extensions (II) – Identifying Development Clusters

- In Pillars, we refer to 'development clusters' as "the observed tendency for effective state institutions, the absence of political violence, and high income per capita to be positively correlated with one another" (p. xi).
- Using the theory developed in Pillars, we were able to develop a typology of state spaces as identified in the following matrix:

	Weak	Redistributive	Common Interest
Peace			
Repression			
Civil War			

State Spaces

- Although Pillars fully outlines the theoretical mechanisms to situate certain countries in the matrix, the three main states of interest can be described as follows:
  - *Weak state* – weak executive constraints and no common interests under peace, civil war or repression.
  - *Redistributive state* – weak executive constraints but varying levels of common interests under peace, civil war or repression.
  - *Common interest state* – strong executive constraints and common interests with no political violence (i.e. peace).
- While there are other parameters involved, such as the ability of insurgencies to form, the government's fighting advantage, and natural resources, the above explanations broadly capture the general typology from the theory (see page 233 of Pillars for further details).

Cluster Analysis (I)

- Notwithstanding the prosperity indices from the slides above, as a final exercise we can thus use statistical learning techniques to test whether there are indeed 'development clusters' as we argue in the book, whereby certain positive outcomes triangulate.
- This should also helps us empirically identify the state spaces from the previous slide.

Cluster Analysis (II)

- One inductive approach is to use a hierarchical clustering on principal components (HCPC) method (Husson et al., 2010).
  1. Perform principal components analysis (PCA) on the variables of interest to reduce the "dimensionality" of the data into a few principal components.
  2. Apply a hierarchical agglomerative clustering (HAC) algorithm (Ward's criterion) to develop a hierarchical tree, called a dendrogram.
  3. A k-means algorithm, based on the suggested "partition" of the dendrogram, is performed to "consolidate" the clusters.
- We perform this analysis on three time periods of interest: 1990, 2000 and 2016.
- Note that many countries will be omitted as the HCPC method requires that a country has data on all relevant variables, unlike the Pillars index where we are slightly more lenient.
  - Across all three years, we have 67 countries with consistent non-missing observations.

Principal Components Analysis (I)

- We take the first two principal components of the raw variables comprising the Pillars index.
  - The scree plots on the next slide show that two principal components are indeed sufficient as suggested by Kaiser's criterion (min. eigenvalue of 1) and the 'elbow test'.
- The PCA loading plots outline the factor loadings of each variable on the underlying components/dimensions, with the vectors outlining the magnitude and direction of the correlations.
- Dimension 2 is largely capturing conflict, with the positive region representing high civil war and the negative region capturing repression.
- Dimension 1 is capturing state capacity and income, with the positive region representing higher values on all measures.

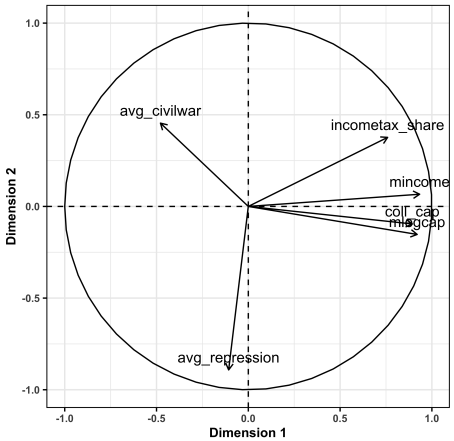
Principal Components Analysis (II)

Table: Factor Loadings from PCA

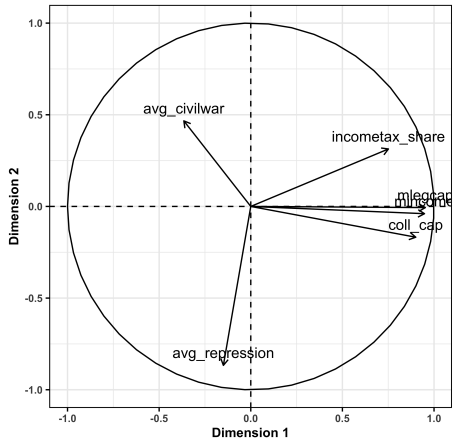
	Principal Components/Dimensions					
	1990		2000		2016	
Variables	**1**	**2**	**1**	**2**	**1**	**2**
Income tax share in total revenue	0.759	0.377	0.751	0.313	0.756	0.320
Legal quality index	0.920	-0.153	0.953	-0.006	0.935	-0.035
Collective capacity index	0.894	-0.096	0.900	-0.168	0.910	-0.159
Prop. of years in repression (1975-)	-0.107	-0.892	-0.149	-0.867	-0.266	-0.780
Prop. of years in civil war (1975-)	-0.479	0.454	-0.365	0.467	-0.284	0.655
Log(GDP per capita)	0.933	0.067	0.948	-0.040	0.932	-0.092

Note: the factor loadings represent the correlation coefficient of each variable with the underlying component/dimension.

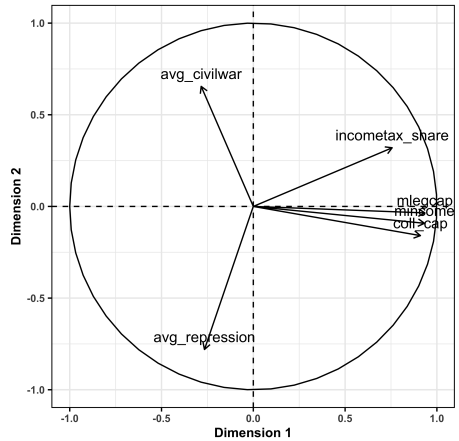
Loading Plots



(a) 1990

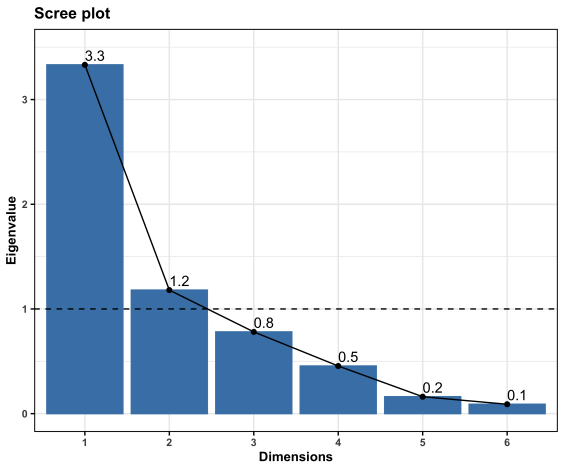


(b) 2000

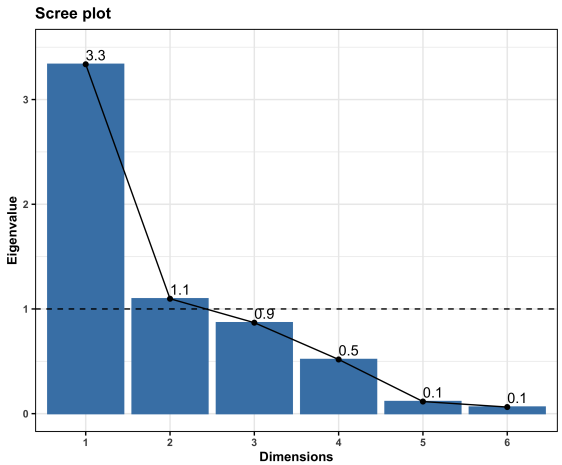


(c) 2016

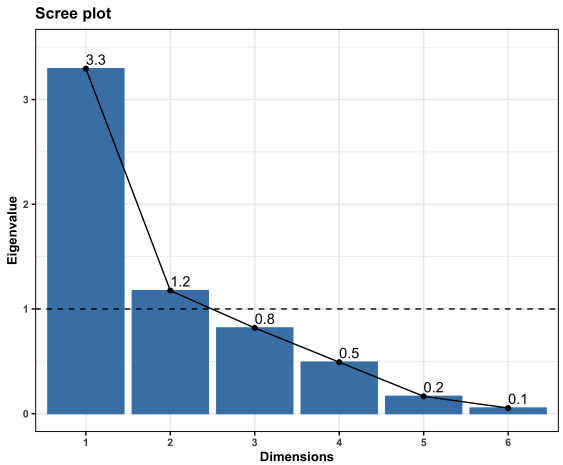
Scree Plots



(a) 1990

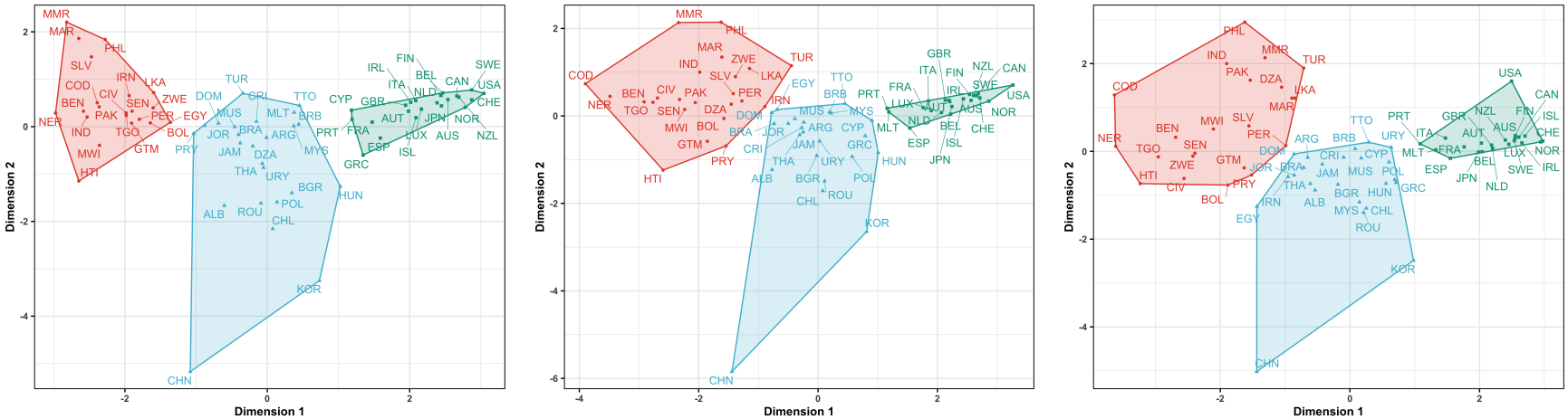


(b) 2000



(c) 2016

Development Clusters Map



(a) 1990 (b) 2000 (c) 2016

Figure: State Spaces Over Three Decades

Development Clusters – Weak and Redistributive States

- Strikingly, we find exactly three persistent clusters across both principal components which largely correspond to the state spaces matrix: weak states, redistributive states, and common interest states.
- The weak states are clearly those with low state capacity and income, with all countries in this cluster being on the negative region of dimension 1.
  - All countries are also marked by civil war being situated in the top left quadrant, as per the PCA graph.
- The redistributive states have a mixed distribution of state capacity and income.
  - Interestingly, a majority of these countries are associated with repression, especially China as a persistent outlier.

Development Clusters – Common Interest States

- The common interest states are almost exclusively the advanced capitalist democracies of Western Europe alongside the Neo-Europes – United States, Canada, Australia and New Zealand –, in addition to other high-income nations such as Japan.
- Interestingly, almost all countries in this cluster hover around 0 of dimension 2 but are on the positive region of dimension 1, hence exhibiting low levels of conflict, strong state capacity and high income.
  - This is exactly what the state spaces predict with regards to the theory in Pillars: common interest states are only those in peace (see p. 233).

Cluster Analysis – Final Comments

- As Besley (2021) highlights, one can easily quibble with the HCPC method, but the fact that the general clusters are identified in the raw data, using the Pillars index subcomponents, is still a striking result.
  - These three clusters are also estimated even when including more 'freedom/liberty' related variables (see Besley, 2021).
- Ultimately, the goal with this exercise is not to provide a definitive classification of countries, but rather to open a structured debate surrounding development clusters.
- As we noted in Pillars, future empirical work could be explored to better identify such development clusters.
  - This HCPC method is at least one such attempt to use a data driven technique in mapping the components of the Pillars index.

Extensions (III) – Development Clusters and Values

- Finally, in tying back development clusters to civic values, we can perform some standard cross-sectional ordered logit regressions to see how well average values predict countries' state space, looking at 2016 as the most recent year with data.
- We create a hierarchically ordered variable based on the theory from Pillars:
  - Weak state – 1
  - Redistributive state – 2
  - Common interest state – 3
- Now we rely on a more comprehensive list of variables from the WVS versus the ones used previously, as per the table on the next slide.
  - See *Pillars 2.dta* codebook for full details on each variable.
  - These variables were chosen not only substantively but also to maximise country coverage as best possible across WVS rounds.

Development Clusters and Values – Variables

Category	Variable
Democratic Values and Beliefs	– Democracy has problems but is better than any other form of government – Importance of democracy – Civil rights protect people's liberty against oppression – Women should have the same rights as men in a democracy – Satisfaction with the way democracy is developing
Confidence, Respect and Trust	– Confidence in the government – Confidence in the judicial system/courts – Important child qualities: tolerance and respect for other people – Trust people in general
Unjustifiable Non-civic Behaviour	– Unjustifiable: accept a bribe – Unjustifiable: cheat on taxes – Unjustifiable: steal property – Unjustifiable: violence towards others

Development Clusters – Democratic Values and Beliefs

	State Space				
	(1)	(2)	(3)	(4)	(5)
Democracy best form of government	1.743	-2.104	-2.416	-1.208	-1.627
	(1.400)	(1.945)	(2.176)	(2.123)	(2.237)
Democracy is important		3.940***	3.690***	2.544**	2.176*
		(1.016)	(1.097)	(1.022)	(1.288)
Democracy should protect liberty			0.867	0.218	0.010
			(0.627)	(0.803)	(0.862)
Women should have same rights as men				1.628**	1.718**
				(0.694)	(0.691)
Satisfaction with way democ. is developing					1.643
					(1.144)
Observations	46	36	35	35	31

Development Clusters – Confidence, Respect and Trust

	State Space				
	(1)	(2)	(3)	(4)	(5)
Confidence in	-3.087***	-3.482**	-2.734*	-3.201**	-1.687
government	(0.868)	(1.187)	(1.442)	(1.337)	(1.757)
Confidence in	3.472***	3.755***	2.488**	1.732	0.862
justice system	(0.878)	(0.961)	(1.124)	(1.122)	(1.335)
Respect as important			10.572***	11.235**	9.616**
child quality			(3.469)	(4.783)	(4.859)
Trust people				12.422***	15.194***
in general				(2.552)	(3.204)
Observations	50	48	50	50	48

Note: columns 2 and 5 drop the outliers of China and Jordan, as identified in the Extensions section of Chapter 3 (Bangladesh and Vietnam have missing data for a state space classification from the previous section).

Development Clusters – Justifiable Non-Civic Behaviour

	State Space			
	(1)	(2)	(3)	(4)
Unjustifiable to accept bribe	1.755**	2.699***	1.809	4.445
	(0.471)	(1.013)	(2.605)	(4.031)
Unjustifiable to cheat on taxes		-1.193	0.082	0.361
		(1.175)	(0.780)	(0.851)
Unjustifiable to steal property			0.503	0.643
			(2.928)	(3.103)
Unjustifiable to to enact violence on others				-2.481
				(2.109)
Observations	51	51	29	29

Development Clusters and Values – Comments (I)

- As per the previous tables, most of the values one would expect to complement more cohesive states are generally correlated in the direction intuition would posit.
- Amongst democratic values and beliefs, the 'importance of democracy' and 'gender equality being an essential characteristic of democracy' is positively correlated with states with stronger capacity.
  - See Besley and Persson (2019) for theoretical framework for complementarities between democratic institutions and values.
- Despite some mixed evidence, most confidence, respect and trust values are significant predictors of a country's state space.
  - Although 'confidence in government' is negatively correlated with more cohesive states, this is driven by the outliers identified in the Extensions section from Chapter 3: China and Jordan.
  - Strikingly, the 'trust in people' and 'respect and tolerance for others as an important trait in children' have very large coefficients.

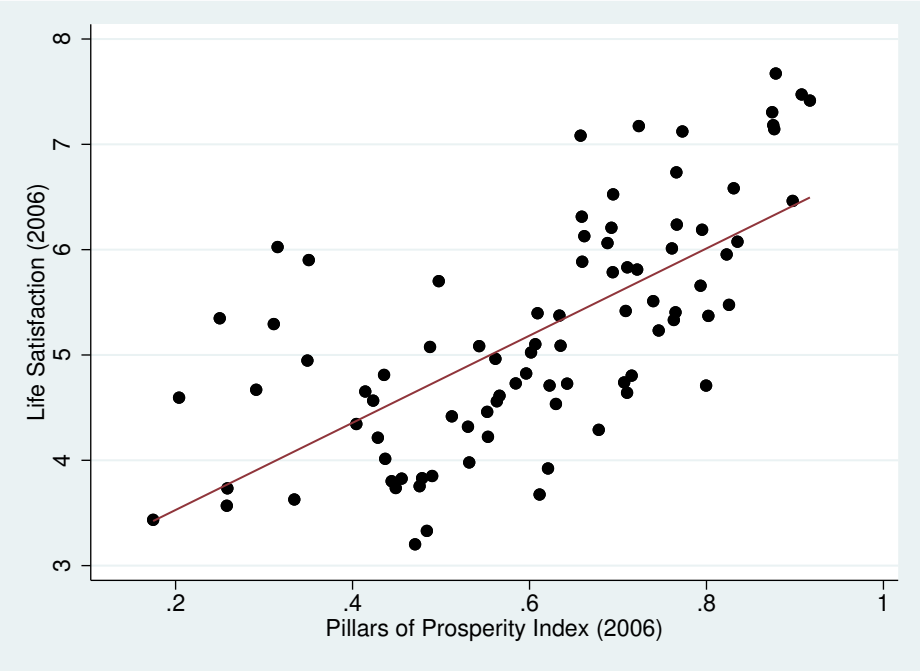
Development Clusters and Values – Comments (II)

- Amongst values concerning non-civic behaviour, societies where citizens on average believe it is unjustifiable to accept bribes are positively correlated with more cohesive states.
  - Although the somewhat mixed significance of results depending on specification is potentially a result of country coverage and data availability from the WVS.
- Again, albeit purely descriptive, the above evidence simply paints a broad picture that development clusters, especially with regards to state capacity, tend to correlate closely with civic values.
  - This is again part of a growing research agenda in political economy since Pillars came out ten years ago stressing the role of values, additional to institutions, in promoting development (Acemoglu & Robinson, 2019; Besley, 2020; Besley & Persson, 2019; Bisin & Verdier, 2017; Collier, 2017; Persson & Tabellini, 2021).

Extensions (IV) – Life Satisfaction

- In related work, Besley and Kudamatsu (2008) write "one of the goals of political economy is to understand how institutional arrangements shape policy outcomes and human well-being" (p. 452).
- As a final exercise, in tying this to the Pillars index, one can measure human well-being through the lens of 'life satisfaction' as promoted by the World Happiness Report.
- The commonly used metric is the Cantril ladder, which asks respondents to think of a ladder, with the best possible life for them being a 10, and the worst possible life being a 0, and then rate their current lives on this 0-10 scale.
- We thus plot the national average of countries' Cantril ladder scores in 2006 and 2016 against the Pillars index, and also condition this on the identified state spaces for 2016.

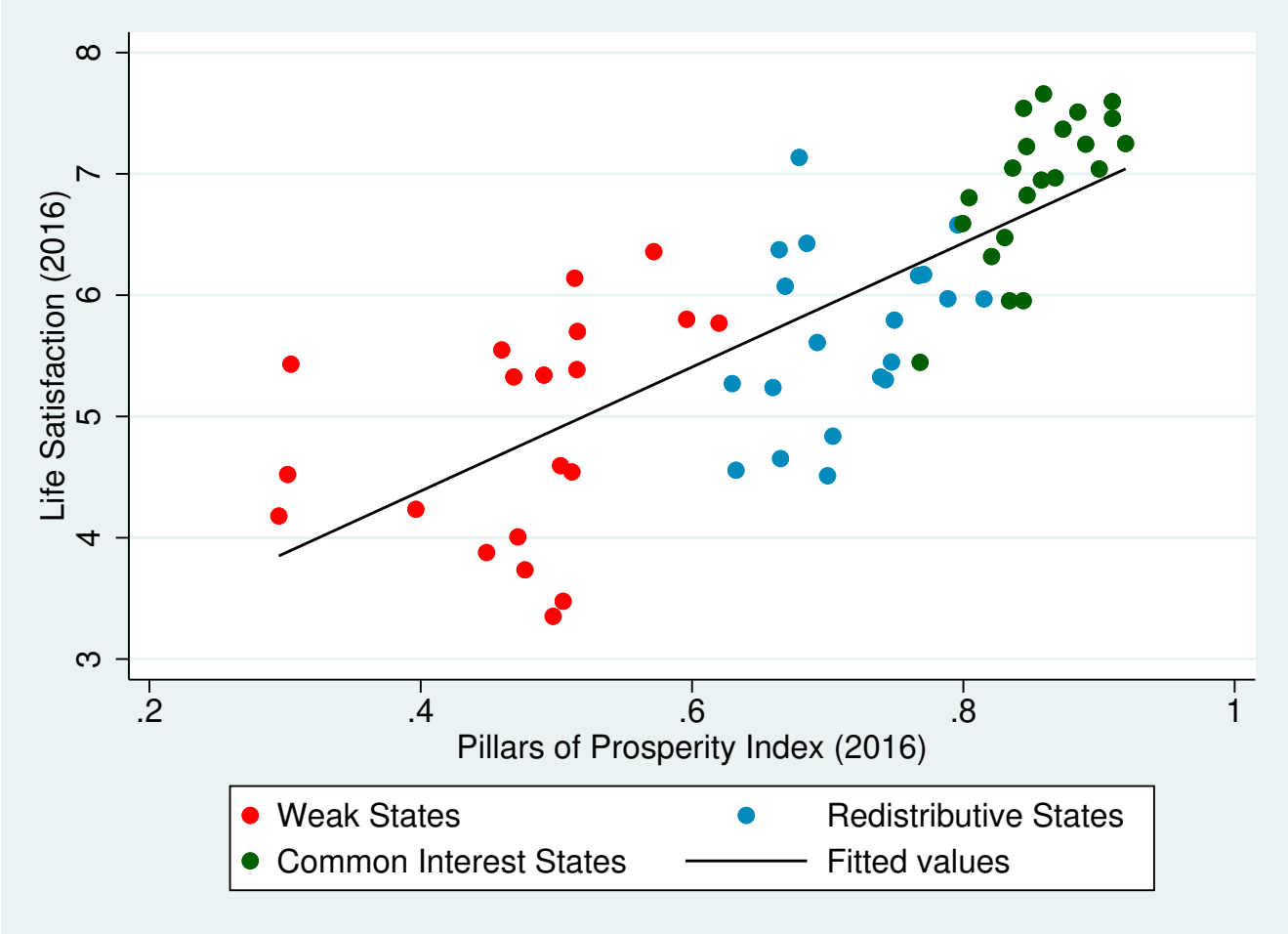
Life Satisfaction and Pillars Index





Life Satisfaction and the Pillars of Prosperity Index, 2006 and 2016

Life Satisfaction and State Spaces



Life Satisfaction and the Pillars of Prosperity Index by State Space, 2016

Life Satisfaction and Prosperity by State Space

- The general close fit between life satisfaction and the Pillars index is distinctive.
  - Such a correlation holds between 2006 and 2016.
- The sharp gradient of the trend line further conveys just how much a nation's politico-economic environment, as crudely captured by the index, correlates with the average life satisfaction of its citizens.
- Finally, with regards to conditioning on state spaces, it is clear that the ordering between weak, redistributive and common interest states positively correlates with average life satisfaction for citizens.
  - There are fewer observations once conditioning on state spaces due to data availability issues when performing the HCPC method, as outlined previously.