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# Measuring Democracy - Eight indices: Polity, Freedom House and V-Dem

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# Measuring Democracy

## Eight indices: Polity, Freedom House and V-Dem

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Abstract:

The paper is an empirical study of eight democracy indices and *income*. The aggregation problem for these indices is large, and thus the gray zone of measurement uncertainty is wide. The indices have no natural scale. Even the top anchor of full democracy is treated differently. In addition, the indices are conceptually different, use different scales, etc. However, they are still highly correlated. Income and all eight indices have one and only one common factor, which is the Democratic Transition, except in the OPEC/MENA sample. Within-project indices are even more correlated. Thus, the details of the assessments used by each project are more important than the conceptual differences. A country-by-country comparison is made of Polity and the Polyarchy index after it is converted to the Polity scale. Many countries are treated differently by the indices. The difference between the two is an estimate of the measurement uncertainty for democracy indices. It is almost three Polity points.

Keywords: Democracy indices, aggregation problem, democratic transition

Jel.: A12, K10, P51

Paper #1 in my measuring democracy project.[2]

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[2] This is the main paper (#1) in my project. It looks at data for the two periods A: 1972-2016 and B: 1960-2016. Papers #2 and #3 give additional calculations for two periods. The project is a follow-up to a book (Paldam 2021). The Appendix (#4) starts with a brief summary of the relevant parts of the book.

# 1. Introduction

It is often discussed if a country is democratic, or if is it moving toward democracy. To study such issues requires a measure of the degree of democracy. This has led to a dozen democracy indices, and it has generated a large body of research using these indices to study the factors making countries more or less democratic, and the consequences of democracy. Table 1 lists the eight indices studied. They are from three projects.

The paper deals with a contradiction: On the one hand, these indices are conceptually different;[3] they aggregate somewhat different indicators and use different scales. The indices score the levels and trends of many countries differently. On the other hand, the indices are highly correlated. They even have the same high autocorrelation, and contain one and only one strong common factor that also includes income. Thus, the ***grand pattern*** is much more alike than suggested by all the differences. The contradiction is due to three deep problems:

**(i)** ***Gray zone of measurement uncertainty***. The indices are aggregates of sets of indicators, of which some are qualitative and many are assessed. Perfect aggregation of heterogeneous indicators is only possible by a fluke, but a range of (equally) good aggregations exists. Thus, the "best" aggregate is only determined within a gray zone. The project groups behind each index, are competent and diligent researchers, who have put years of work into their project. Each project has its own assessment package. Thus, the difference between the indices provides an estimate of the size of the gray zone; see section 4.2.

**(ii)** ***No natural scale***. All indices are reported using linear scales. They are anchored at the low end of full authoritarianism and the high end of full democracy, but in between they represent somewhat arbitrary choices. When an index reports that country A scores $x$ and country B scores $2x$ relative to the range of the index, it says that there is twice as much democracy in B. Such ratios replicate poorly from one index to the next.

**(iii)** ***Top anchor.*** The *FH* and the *Polity* indices see democracy as a concrete set of rules that can be implemented (also de facto). Hence, they score many countries as full democracies. The V-Dem indices see democracy as a utopian ideal that can only be approached. Hence, countries never reach the top of the scale. It means that the V-Dem indices score democratic countries with a range that seems large, compared to the differences at the lower part of the scale; see sections 4.3 and 5.1 for examples.

[3] The groups behind the main indices have published detailed codebooks; see Marshall *et al.* (2018) and Coppedge *et al.* (2020). Munck and Verkuilen (2002) opened the discussion on the theory. It led to many contributions, see Boese (2019) for a survey of the ensuing discussion, and Gründler and Krieger (2021a) for a comprehensive survey of the compilation methods and coverage of all available measures.

Table 1. Eight democracy indices and income

| Project | Index | Scale |
|---|---|---|
| Maddison | (1) *Income y* = ln *gdp* | *gdp* is GDP per capita. The *cgdppc* series from the project |
| Polity | (2) *Polity* (the Polity2 series) | Closed set of [-10, 10] integers. -10 is fully authoritarian, 10 is fully democratic, zero is no system. 18% of the data are +10 |
| V-Dem | (3) *Vpol* Polyarchy and *PVpol*<br>(4) *Vlib* liberal democracy<br>(5) *Vpar* participatory democracy<br>(6) *Vdel* deliberate democracy<br>(7) *Vega* egalitarian democracy | Open interval ]0, 1[ 3 decimals. 0 is perfect authoritarian, 1 is perfect democracy. These ideals are not reached. The highest score until now is 0.924. The V-Dem project stresses the conceptual difference between the indices, but they are highly correlated. *PVpol* is *Vpol* converted to the Polity scale |
| Freedom House | (8) *CL* = 8 – *CLr*, Civil Liberties<br>(9) *PR* = 8 – *PRr,* Political rights<br>*FH* = (*CL* + *PR*)/2 = 8 – *FHr* | Closed set [7, 1] integers. 7 is fully authoritarian, 1 is fully democratic. *CL* and *PR* are highly correlated. One year is missing, and has been interpolated. The '*r*' indicates the rescaling. |

The data in each sample are for the same countries and years. Observations where *Polity* = 0 are omitted

| Periods | Main sample, 139 cntr | OPEC Sample, 16 cntr | Indices available | Backup papers |
|---|---|---|---|---|
| A: 1972-2016 | *N* = 5,616 | *N* = 675 | All eight | Paper #2 |
| B: 1960-2016 | *N* = 6,852 | *N* = 799 | Six, *FH* missing | Paper #3 |

The references give the manuals for the indices and the home pages where the data are posted. The abbreviation 'cntr' means country. The main index for each project is *FH*, *Polity*, and *Vpol* (Polyarchy).

As mentioned it is a main finding that the grand pattern in the indices is the same, i.e. they have the same path over time and as a function of income. The main exception is that the OPEC/MENA groups of countries have a different pattern in both respects.[4]

The analysis refers to two books: Paldam (2021), which studies long-run transitions of institutions, notably the Democratic Transition, mainly using the *Polity* index. It also contains a survey of the literature. Christoffersen *et al.* (2014), which contains a detailed comparison of the Danish and Swiss political systems. They are quite different, but everybody agrees that both countries are full democracies; see the World Values Surveys.

This paper looks at two periods: Period A (1972-2016), where the data cover all indices, and Period B (1960-2016), where the Freedom House indices are missing. The macro analysis in sections 2 and 3 covers all eight series. Hence, Period A is used. The country comparison in sections 4 and 5 requires that indices are in the same scale, and concentrates on the *Policy* and *PVpol*, which is *Vpol* (Polyarchy) converted to the Policy scale. Hence, Period B is used.

I believe that results should be displayed so that everybody can see what is going on. However, graphs take space, which requires background documentation. Papers #2 and #3 provide further evidence for the two periods. Paper #2 also analyzes the MENA sample. An Appendix (Paper #4) lists the countries, including the classification used. Seven countries are successors of an old country: USSR becomes Russia, West Germany becomes Germany, North Vietnam becomes Vietnam, etc.; see Appendix.

[4] OPEC is the organization of Oil Exporting Countries, where the sample includes 16 countries. MENA is Middle Eastern and North African Countries (excl. Israel), where the sample contains 18 countries. Eight countries overlap.

## 2. Correlation, factor analysis and distributions (Period A)

Section 2.1 looks at correlations, while section 2.2 shows that correlations within-projects are higher than between-projects, and discusses why. Section 2.3 reports factor analyses. Section 2.4 compares the frequency distribution of the indices, and section 2.5 looks at 1,267 observations where *Polity* is 10, while section 2.6 analyzes the importance of the anchors for the correlations.

All variables are panels with a country and a time dimension. We consider three types of correlations: In the unified data sample, between-countries and within-countries. Tables 2 and 3 cover the first two of these correlations.

### *2.1 Correlations for the two samples: Democracy indices are highly inter-correlated*

Table 2 is for the Main sample, and Table 3 is for the OPEC sample. Both tables report two correlation matrices: One for the unified data, and another for the between-countries, i.e., for country averages. The latter is always higher, though only by 4-5%. Two predictions follow: If the time unit is larger than a year, the result would be the same, and the average within-country correlations must be smaller. Papers #2 and #3 confirm these predictions.

Each of the four matrices hold 36 meaningful correlations, of which eight are between income and a democracy index, while the remaining 28 are inter-correlations between democracy indices. The within-project correlations are shaded gray. The 4 x 28 inter-correlations between the indices are always high and rather similar in all four matrices.

The high inter-correlation of the eight democracy indices must mean that the ***underlying indicators are strongly correlated***. Thus, it is not very important which ones are selected for an index, as they all show much the same.

Table 2. Correlation in Main sample, 1972-2016

| | Unified annual data. $N$ = 5,616 | | | | | | | | | Between-countries. $N$ = 139 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| (1) *Income* | 1 | | | | | | | | | 1 | | | | | | | | |
| (2) *Polity* | 0.55 | 1 | | | | | | | | 0.61 | 1 | | | | | | | |
| (3) *Vpol* | 0.65 | 0.90 | 1 | | | | | | | 0.71 | 0.93 | 1 | | | | | | |
| (4) *Vlib* | 0.69 | 0.86 | 0.98 | 1 | | | | | | 0.73 | 0.89 | 0.98 | 1 | | | | | |
| (5) *Vpar* | 0.68 | 0.87 | 0.97 | 0.97 | 1 | | | | | 0.72 | 0.90 | 0.98 | 0.98 | 1 | | | | |
| (6) *Vdel* | 0.67 | 0.87 | 0.98 | 0.98 | 0.97 | 1 | | | | 0.71 | 0.90 | 0.98 | 0.99 | 0.97 | 1 | | | |
| (7) *Vega* | 0.73 | 0.81 | 0.95 | 0.98 | 0.95 | 0.96 | 1 | | | 0.76 | 0.85 | 0.96 | 0.98 | 0.96 | 0.97 | 1 | | |
| (8) *PRr* | 0.62 | 0.90 | 0.92 | 0.91 | 0.90 | 0.90 | 0.86 | 1 | | 0.69 | 0.95 | 0.97 | 0.95 | 0.95 | 0.94 | 0.90 | 1 | |
| (9) *CLr* | 0.66 | 0.86 | 0.90 | 0.90 | 0.90 | 0.90 | 0.87 | 0.93 | 1 | 0.72 | 0.93 | 0.96 | 0.95 | 0.95 | 0.95 | 0.92 | 0.98 | 1 |

*PR* and *CL* are rescaled as *PRr* = 8 – *PR* and *CLr* = 8 – *CL*. Within-project correlations are shaded in gray.

Table 3. Correlation in OPEC sample, 1972-2016

| | Unified annual data. $N = 675$ | | | | | | | | | Beween-countries. $N = 16$ | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| (1) *Income* | 1 | | | | | | | | | 1 | | | | | | | | |
| (2) *Polity* | -0.34 | 1 | | | | | | | | -0.55 | 1 | | | | | | | |
| (3) *Vpol* | -0.27 | 0.91 | 1 | | | | | | | -0.46 | 0.95 | 1 | | | | | | |
| (4) *Vlib* | -0.10 | 0.83 | 0.94 | 1 | | | | | | -0.22 | 0.87 | 0.95 | 1 | | | | | |
| (5) *Vpar* | -0.24 | 0.90 | 0.97 | 0.93 | 1 | | | | | -0.39 | 0.95 | 0.98 | 0.95 | 1 | | | | |
| (6) *Vdel* | -0.11 | 0.84 | 0.93 | 0.95 | 0.92 | 1 | | | | -0.23 | 0.84 | 0.94 | 0.96 | 0.91 | 1 | | | |
| (7) *Vega* | -0.04 | 0.81 | 0.92 | 0.93 | 0.91 | 0.95 | 1 | | | -0.13 | 0.83 | 0.91 | 0.94 | 0.89 | 0.95 | 1 | | |
| (8) *PRr* | -0.09 | 0.78 | 0.85 | 0.88 | 0.85 | 0.85 | 0.82 | 1 | | -0.19 | 0.85 | 0.92 | 0.98 | 0.93 | 0.96 | 0.92 | 1 | |
| (9) *CLr* | -0.08 | 0.70 | 0.77 | 0.77 | 0.78 | 0.77 | 0.71 | 0.84 | 1 | -0.14 | 0.78 | 0.86 | 0.91 | 0.88 | 0.91 | 0.82 | 0.95 | 1 |

See note to Table 2.

Tables 2 and 3 have a major difference. While the correlation between *income* and the democracy indices are all positive and substantial in Table 2, they are all negative, but numerically smaller in Table 3. Thus, the effect of rising *income* is different in OPEC countries.

### *2.2 Within-project indices are more correlated: The fact and an interpretation*

Table 4 analyzes the 4 *x* 28 inter-correlations of democracy indices from Tables 2 and 3. Row (1) gives the average for all 28 correlations. Row (2) reports the averages of the 17 correlations between projects. They are always smaller than the correlations in row (1). This suggests that the within-project correlations must be higher, as is indeed the case: Row (2) is the between-project correlations, and row (3) shows their upper 95% confidence limit. Row (4) reports the correlations within the FH-project. They are all above the limit in row (3), and so are all the 10 correlations within the V-Dem project. Moreover, all t-tests in row (6) comparing the within-V-Dem project correlations and the between-projects correlations are significant.

Table 4. Comparing the between-project and the within-project correlations

| Correlations | | *N* | Main sample. Table 2 a. Unified | Main sample. Table 2 b. Countries | OPEC sample. Table 3 a. Unified | OPEC sample. Table 3 b. Countries |
|---|---|---|---|---|---|---|
| (1) All | Average<br>(St.dev.) | 28 | 0.916<br>(0.046) | 0.946<br>(0.034) | 0.858<br>(0.074) | 0.910<br>(0.050) |
| (2) Between-projects | Average<br>(St.dev.) | 17 | 0.884<br>(0.026) | 0.928<br>(0.031) | 0.813<br>(0.058) | 0.892<br>(0.054) |
| (3) | Av + 2se | 17 | 0.897 | 0.943 | 0.841 | 0.918 |
| (4) Within FH Project | One obs. | 1 | 0.932 | 0.980 | 0.844 | 0.951 |
| (5) Within V-Dem project | Average<br>(St.dev.) | 10 | 0.969<br>(0.011) | 0.974<br>(0.009) | 0.935<br>0.017 | 0.936<br>(0.024) |
| (6) Comparing (2) and (5) | t-test, p% | | $4.5 \cdot 10^{-8}$ | 1.0 | $7.2 \cdot 10^{-5}$ | 1.5 |

Thus, ***the within-project correlations are higher than the between-project correlations***. This fact has an important implication. Each project has its own theory and develops a set of principles for the assessments of the underlying indicators, i.e. its assessment package. The indices differ for two reasons: (1) Because they are conceptually different, i.e. they measure something different. (2) Because the assessment package differs between the projects. The fact means that (2) is more important than (1). This tallies with the very high factor loadings on the within-project variables reported in the next section. It makes it hard to believe that conceptual differences between democracy indices are an important phenomenon. The devil is in the details, not in the concepts.

### *2.3 The factor analysis: Both samples contain one and only one common factor*

The four factor analyses in Table 5 are closely related to the correlation analysis, but it still adds an important point. For a factor to matter, it should have an eigenvalue of at least one. The four analyses find only one such eigenvalue, and it is substantial.

Table 5. Four factor analyses, 1972-2016

| | Main sample | | | | OPEC sample | | | |
|---|---|---|---|---|---|---|---|---|
| | Annual data | | Country averages | | Annual data | | Country averages | |
| | *N* = 5,616 | | *N* = 139 | | *N* = 675 | | *N* = 16 | |
| Factor | Eigenv | Cumul | Eigenv | Cumul | Eigenv | Cumul | Eigenv | Cumul |
| Factor1 | 7.83 | 0.97 | 8.13 | 0.97 | 6.96 | 0.90 | 7.46 | 0.85 |
| Factor2 | 0.25 | 1.00 | 0.22 | 1.00 | 0.63 | 0.99 | 1.07 | 0.97 |
| | Factor loadings | | Factor loadings | | Factor loadings | | Factor loadings | |
| Variable | Factor1 | Factor2 | Factor1 | Factor2 | Factor1 | Factor2 | Factor1 | Factor2 |
| (1) *Income* | 0.69 | 0.25 | 0.73 | 0.24 | -0.18 | 0.68 | -0.34 | 0.91 |
| (2) *Polity* | 0.90 | -0.28 | 0.93 | -0.28 | 0.90 | -0.25 | 0.93 | -0.27 |
| (3) *Vpol* | 0.99 | -0.03 | 0.99 | -0.02 | 0.98 | -0.13 | 0.99 | -0.14 |
| (4) *Vlib* | 0.99 | 0.09 | 0.99 | 0.09 | 0.96 | 0.11 | 0.98 | 0.13 |
| (5) *Vpar* | 0.98 | 0.05 | 0.98 | 0.03 | 0.97 | -0.10 | 0.98 | -0.08 |
| (6) *Vdel* | 0.98 | 0.05 | 0.98 | 0.05 | 0.96 | 0.10 | 0.97 | 0.12 |
| (7) *Vega* | 0.96 | 0.21 | 0.97 | 0.20 | 0.94 | 0.17 | 0.94 | 0.19 |
| (8) *PRr* | 0.94 | -0.20 | 0.97 | -0.17 | 0.90 | 0.12 | 0.97 | 0.17 |
| (9) *CLr* | 0.93 | -0.11 | 0.98 | -0.09 | 0.82 | 0.12 | 0.92 | 0.21 |

The gray shading indicates results of low reliability. Factor2 in the last analysis is a borderline case, but here *N* = 16 only. The two abbreviations are 'Eigenv' is eigenvalue and 'Cumul' means cumulative.

As expected all loadings of the democracy indices to Factor1 are high, notably within the V-Dem family, where the average loading is 0.98 in the main sample, while it is 0.96 in the OPEC sample. If *income* is excluded, the rest of the table remains virtually the same.

In the Main sample, *income* loads highly to Factor1 as well. Thus, *income* and the large common factor in all eight democracy indices are strongly correlated. Section 3.2 shows how the factor looks. It is the ***Democratic Transition***. In the OPEC sample, the factor loading on *income* is small and negative, thus the transition is different; see section 3.3.

Paper #2 repeats the same tables for the MENA countries and the M-Main sample, which is all other countries, and finds virtually the same results for the Main and the M-Main samples. It also studies the lead-lag structure between the democracy indices and shows that neither index leads or lags any other index significantly, though there is a tendency for *Polity* to lead *Vpol*.

### *2.4 The distributions of the indices: Illustrating the absence of a natural scale*

The three graphs of Figure 1 give the frequency distribution of the three indices for the full dataset. The number of bins is the same 20 for *Polity* and *Vpol*, but the scale of the FH-index only allows 12 bins. The density distribution is different along the horizontal axis. At all three graphs and later ones the midway point is indicated; see e.g. Figures 3 to 5.

None of the indices have a normal distribution. All three distributions are low in the middle and have a peak at either end. The *FH* index is symmetrical in the sense that the median and the mean are the same. Thus, there is almost the same number of observations to the right and left of the middle of the scale. The median of the *Polity* index is larger than the mean, so more countries are in the democratic range. The median of the *Vpol* index is smaller than the mean. Thus, more countries are in the authoritarian range.

The asymmetry is even more pronounced when the end of the scale is considered. The *Polity* index scores 20% of the countries at 10 for full democracy. The *FH* index scores 15% of the countries at 1 for full democracy. The two indices agree that 33 countries have reached full democracy. However, the *Vpol* index has no observations in the highest bin – the highest value observed is 0.924. The other four V-Dem indices are even lower for the highest value observed. Still, Figure 1c does have a democracy peak for index values from 0.85 to 0.9. The next section discusses the top anchor difference in more detail.

The OPEC/MENA countries deviate substantially from the Main sample. Even when they are wealthy, they have little democracy.

### *2.5 The 1,269 observations where Polity is 10 for full democracy: The top anchor problem*

Figure 2 shows the frequency distribution of the other two indices for the 1,269 observations where *Polity* is 10. 69% of the *FH*-scores agree by having 1 for full democracy.

Figure 1a. The *FH* index. Note reverse axis

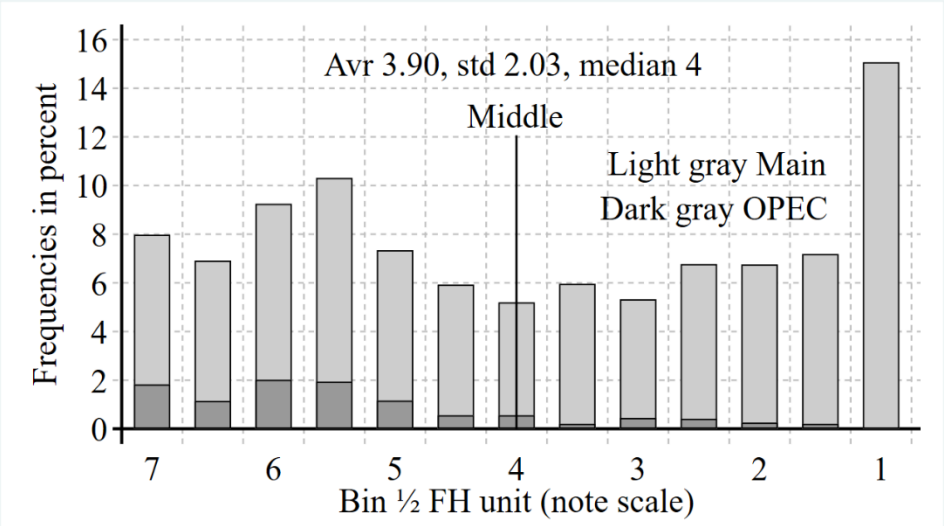



Figure 1b. The *Polity* index (Polity2)

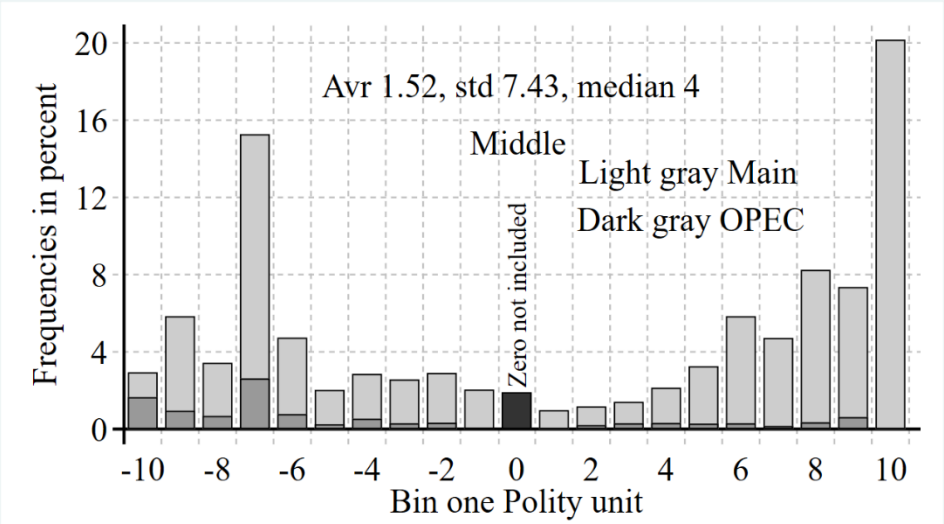
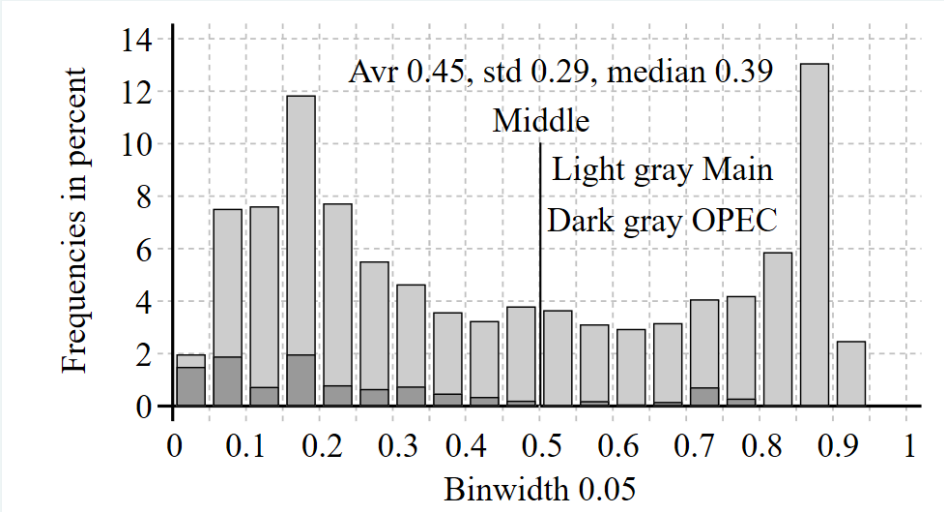



Figure 1c. The *Vpol* index (Polyarchy). The highest bin is empty




The three figures cover Period A (1972-2016). $N$ = 5,616 for Main sample and $N$ = 675 for OPEC sample.

Figure 2. The 1,269 observations for the FH and the Vpol indices where Polity is 10

Figure 2a. For the *FH* index

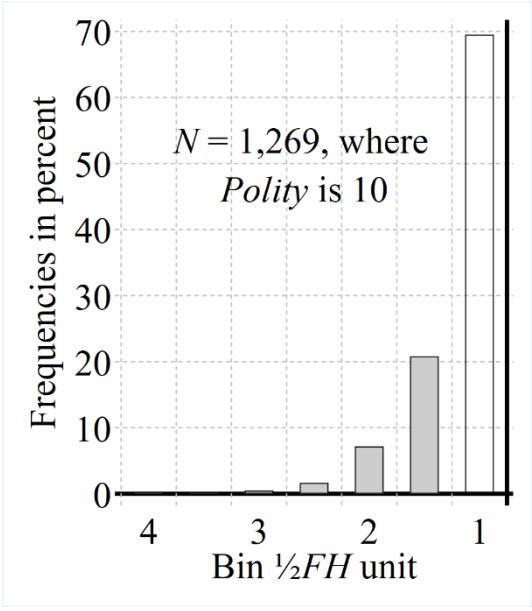
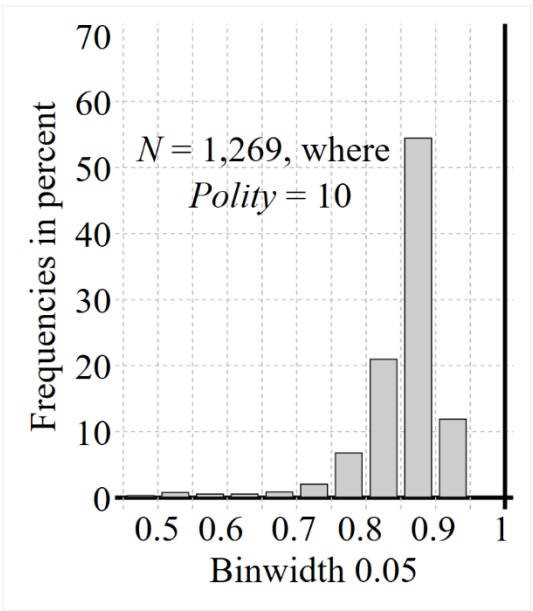



Figure 2b. For the *Vpol* index




Note: The empty bar on Figure 2a indicates that the FH index is scored at 1 for full democracy. On Figure 2b the numbers on the horizontal axis are for the upper limit of bin.

Figure 3 further analyzes the 1,269 observations for *Vpol* data from Figure 2b. It appears that the largest differences between *Polity* and *Vpol* occur for middle-income countries. While Polity scores some such countries as full democracies, the V-Dem project is reluctant to accept this possibility.

Figure 3. The *income* dependency of the 1,269 *Vpol* observations, where *Polity* is 10


*2.6 How much do the anchors matter for the correlations?*

It has been proposed that the reason for the high correlations in Tables 2 and 3 is that the top

anchors are similarly scored in all indices. Table 6 shows that the ends does not matter much for the inter-correlation between the democracy indices. However, it does matter for the correlations between *income* and the democracy indices. It falls substantially when the sample is divided by *income*. To study the Democratic Transition wide samples or long time series are necessary.

Table 6. Dividing the main sample into three equal parts after sorting by *income*

| Correlation | (1) All 5,616 | (2) Smallest third | (3) Middle third | (4) Largest third | Average of (2), (3) and (4) |
|---|---|---|---|---|---|
| Correlation between the three main indices | | | | | |
| *FHr, Polity* | 0.901 | 0.822 | 0.955 | 0.922 | 0.900 |
| *FHr, Vpol* | 0.927 | 0.820 | 0.860 | 0.946 | 0.875 |
| *Polity, Vpol* | 0.904 | 0.839 | 0.870 | 0.921 | 0.877 |
| Correlation to *Income* | | | | | |
| *Income, FHr* | 0.649 | 0.093 | 0.256 | 0.379 | 0.243 |
| *Income, Polity* | 0.545 | 0.003 | 0.252 | 0.254 | 0.170 |
| *Income, Vpol* | 0.654 | 0.076 | 0.300 | 0.367 | 0.248 |

## 3. The grand pattern: Over time and as a function of income (Period A)

Section 3.1 reports the path of the eight indices over time, while sections 3.2 and 3.3 analyze the relation to income. From section 2, we know that all democracy indices have one strong common factor, which in the Main sample is found in *income* as well. Section 3.2 shows how it looks.

### *3.1 The development over time of all average indices: Much the same story*

Figure 4 depicts the paths of the eight indices over time for all N = 6,291 observations. The number of countries rises a bit over time from 123 to 151, but even if we look at the countries that have data for all years, the eight curves look rather similar. All eight curves are largely parallel, but the level of the five V-Dem indices is lower. Two points should be noted.

Figure 4a. The development over time for *Polity* and the two Freedom House indices

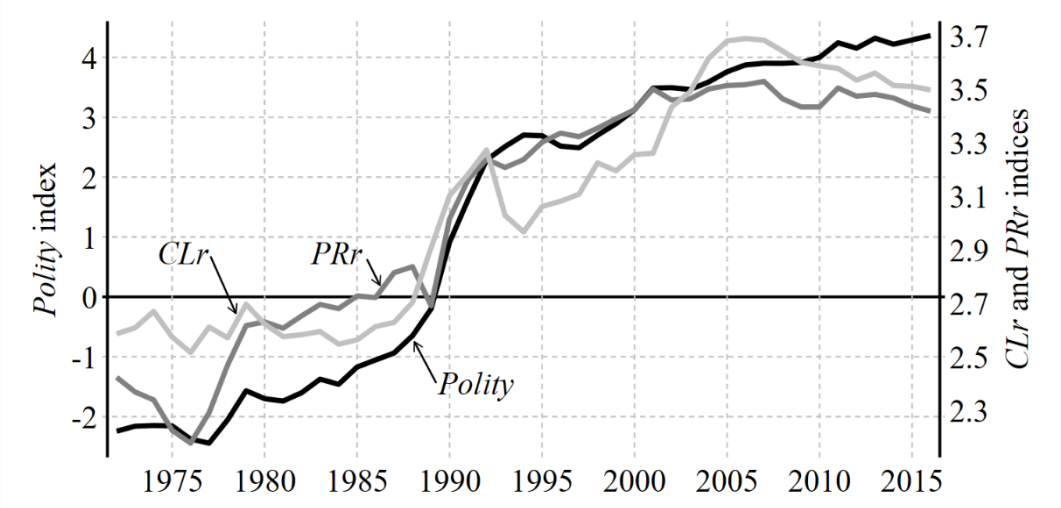
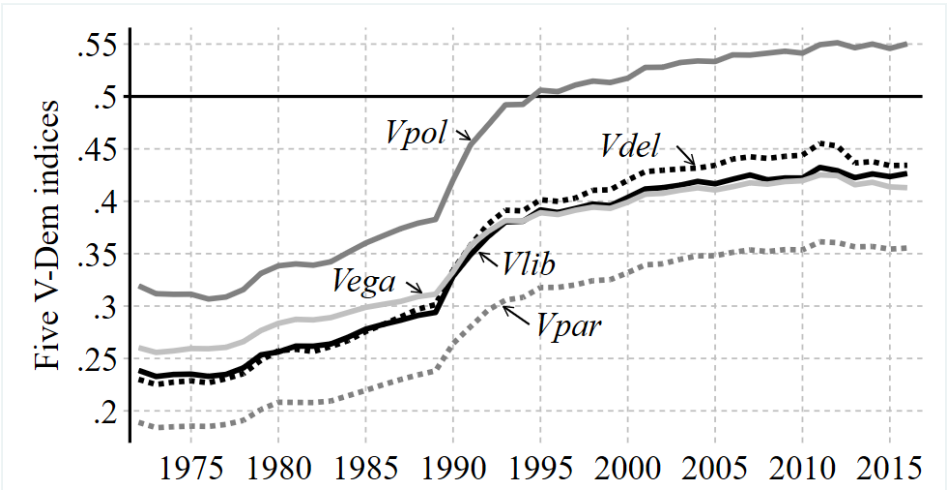



Figure 4b. The development over time for the five V-Dem indices



Point one: The two Freedom House indices, *CL* and *PR*, and the *Vdel* and *Vega* indices turn to show falling democracy from 2006 onwards. However, *Polity* and the other three V-Dem indices keep rising. Thus, it is dubious if the path toward democracy has been interrupted in the last 15 years, but we may conclude that the ongoing democratization has slowed.

Point two: The five V-Dem curves are parallel. They differ substantially by level, but not much by path. That is, if we multiply by the appropriate constant the curves become virtually the same, though the *Vega*-curve rises a bit less than the other four series. It is no wonder that the correlations and factor loadings are so similar.

### *3.2. The Main sample: A perfect transition curve*

This section reports how well *income* explains the tree main democracy indices: *P* = *Polity*, *Vpol* and *FH*. The demonstration uses Kernel regressions *P* = *K*(*Income*, 0.5), where 0.5 is the bandwidth.[5] The kernel is a smoothed moving average with a constant bandwidth.

The kernel is calculated for the unified data (the stacked panel), organized by *income*. The sorting by income means that the data are scrambled in all other dimensions than *income*. Thus, the kernel regression is a fine univariate analysis for the Main sample.

The three kernel-curves look similar, and as a transition curve should, and the 95% confidence intervals are narrow. At low *income*, they are (almost) constant at moderate dictatorship, and at high income, they are (almost) constant at high democracy. In between, the curve moves smoothly from the low to the high level. The amounts of the curve below the middle differ as predicted by Figure 2. At the low-income level, the upturn starts at *income y* = 7. The only problem is that the curve has a negative slope for *Polity*, but the negative part of the curve does not generalize to the other two curves, and it is fragile to the bandwidth and to the period covered.

At the high-income level, the flat section happens before full democracy is reached. It turns out to be due to three outliers: Bahrain and Oman, and Singapore.

The data contains 1,124 5-year averages for the series. They give transition curves that are virtually the same as the three curves on Figure 5. The same happens when the M-Main sample is used; see Paper #2 It also shows that similar curves appear for the 139 country averages, even when the confidence intervals become wider. Paper #3 for 1960-2016 reports that the curves on Figure 5c generalize nicely for all five V-Dem indices. The curves for *Polity* and *Vpol* are also the same as in the present paper.

[5] The kernels use the lpoly function from Stata, with standard defaults. They are the Epanechnikov kernel and the degree of polynomial smooth at zero. The options *nosc* suppresses the scatter and *ci* provides the 95% confidence intervals (shown); see chpt. 2 of Paldam (2021).

Figure 5a. Democratic Transition in the *FH* index. Main sample

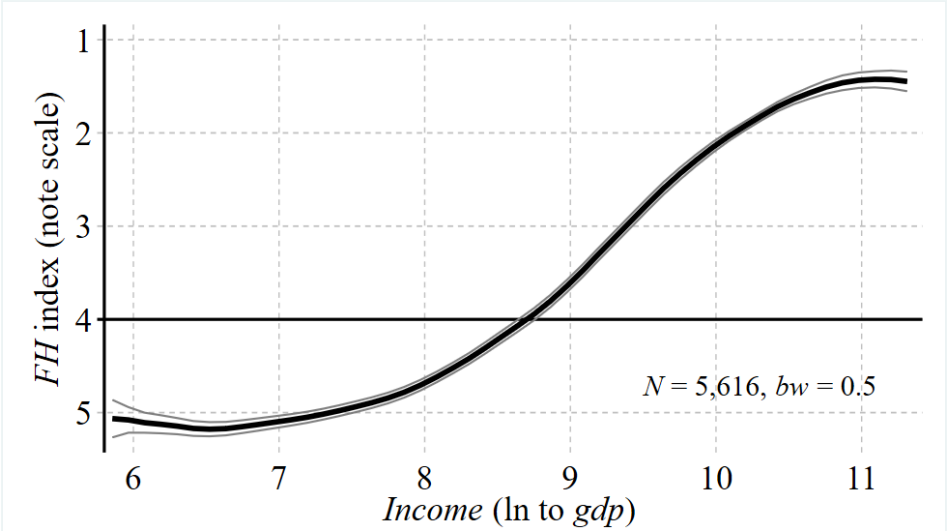



Figure 5b. Democratic Transition in the *Polity* index. Main sample

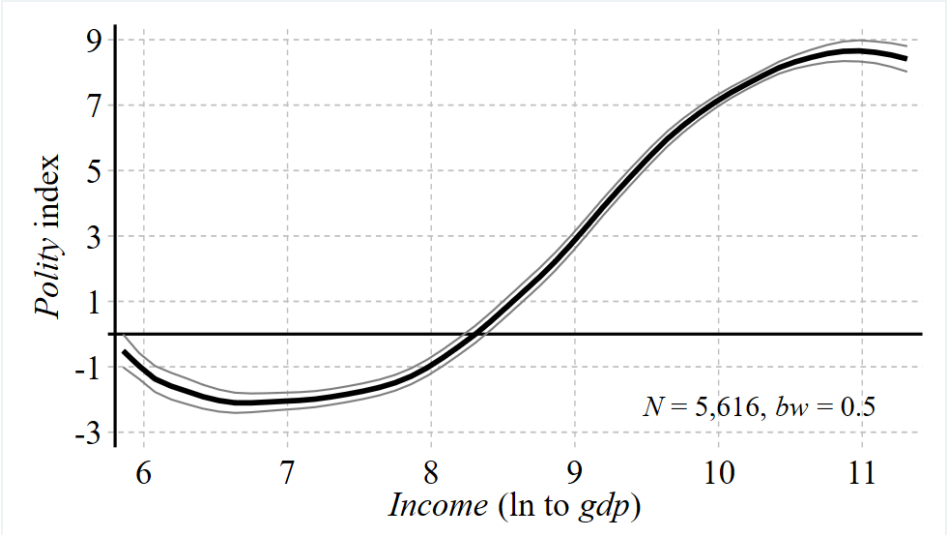
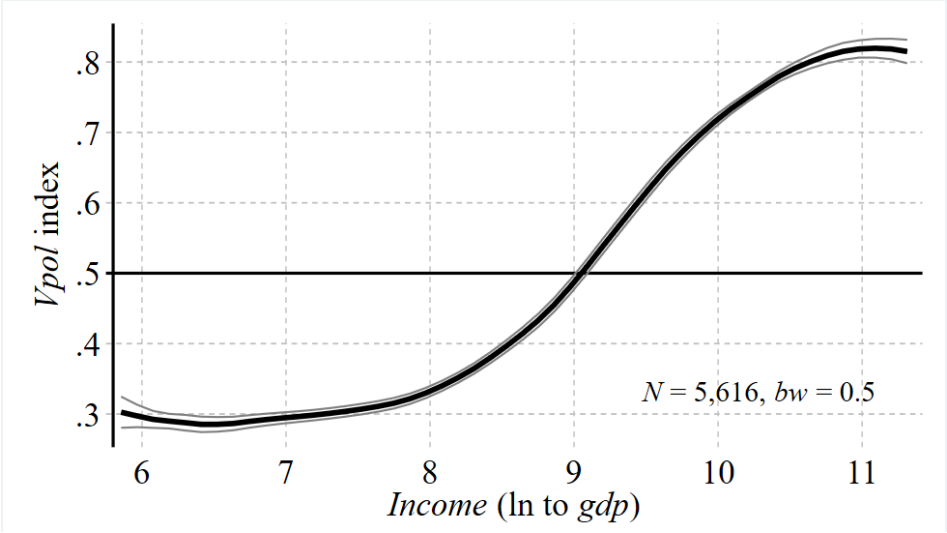



Figure 5c. Democratic Transition in the *Vpol* index. Main sample



Paldam (2021) studies the curve on Figure 5b in considerable detail and provides an explanation. It also appears in long time series, and it is robust to a great many variations in the sample, time-period, bandwidth, etc. Thus, we are looking at a very robust phenomenon. From a set of causality tests, not repeated at present, it is concluded that the causal flow from *income* to democracy is much larger than the causal flow the other way. As this conclusion is controversial, it is discussed in some detail.

The explanation uses two models: The ***three pillars model*** sees the traditional political system as resting on a royal family, a feudal nobility and a national Church. The agricultural and the religious transitions undermine the last two pillars. This gives an underlying long run transition path (as shown). The ***jumps model*** shows that this path is an attractor for system jumps caused by random triggering events. Thus, strong but fuzzy transition paths result. While the path is noisy in each country, it becomes smooth in the average country.

### *3.3 The OPEC/MENA sample: A different story*

The three graphs of Figure 6 are parallel to Figure 5, but cover the OPEC sample. As the kernels are estimated from much fewer observations, they have wider confidence intervals. In addition, the observations for the 16 countries are less well scrambled, so that the curves have sections that are dominated by one to two countries. Still they show a pattern.

On Figure 6 the horizontal axis is at the midpoint of the scales, which divide the democratic and the authoritarian parts of the picture. All curves are below that axis. In addition, they have a significantly negative slope – also the *FHr* index. The curves on Figures 5 and 6 are similar from *income* $y$ = 7.5 to 9, but from $y$ = 9 the OPEC curves turn down, so that raising *income* generates more authoritarian regimes. The Freedom house scores Qatar at 5.5, which is less authoritarian than the other indices, so the fall in the curve is less pronounced on Figure 6a. However, it is clear that there is no democratic transition in the OPEC countries. When *income* rises, oil-countries turn more authoritarian. This was also the finding in the correlation and factor analysis.

It is possible that the deviating OPEC pattern is due to the fact that half of the OPEC countries are in the MENA region, which is the Middle East and North Africa, where Arab/-Muslim culture dominates and gives spatial effects. Consequently, the kernel curve for the MENA countries is included on the three graphs. It appears that the MENA curves are a little lower, and flatter; see Paper #2.[6]

[6] Borooah and Paldam (2007) try to sort out the (negative) effect of oil and Islam on democracy, and find that both factors counts.

Figure 6a. The Transition of the *FH* index in the OPEC/MENA sample

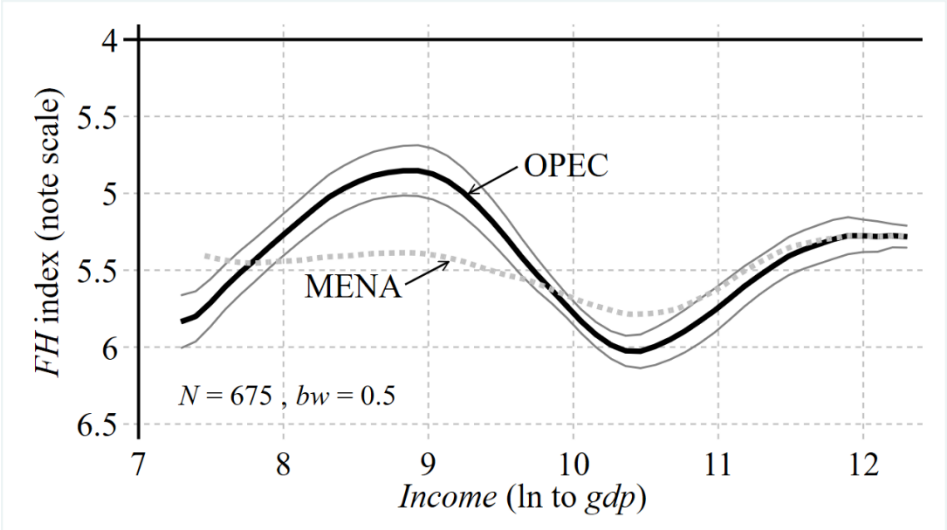



Figure 6b. The Democratic of the *Polity* index in the OPEC/MENA sample

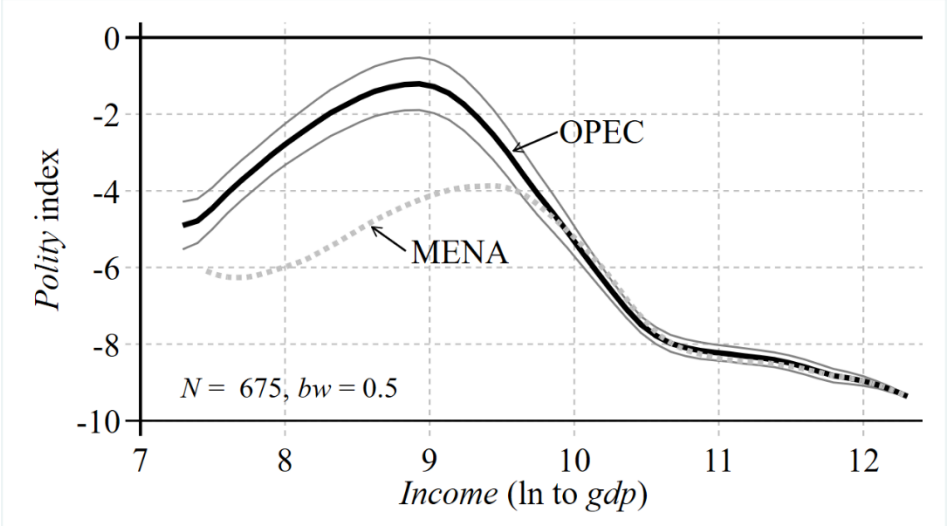
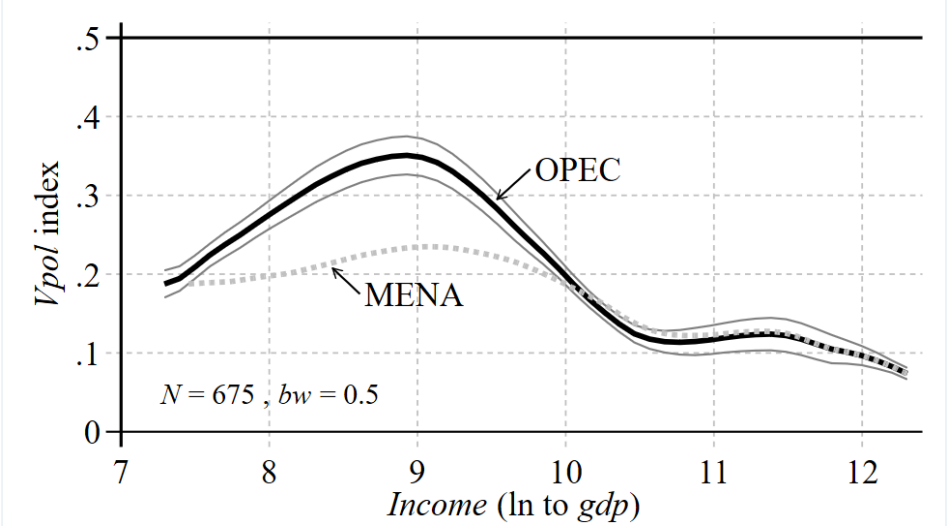



Figure 6c. The Transition of the *Vpol* index in the OPEC/MENA sample




The three graphs also include a kernel for 18 MENA (Middle East and North Africa) countries with $N = 708$; see footnote 7. Eight of these countries are also OPEC members. The overlap is strongest for high *income*.

The key explanation of the OPEC exception is likely to be that oil generates resource rent, which is easily taxable, and thus it gets under the control of the rulers of the country. This allows the rulers to spend on regime consolidation without taxing ordinary citizens. Furthermore, it is likely to lead to a consolidation of other institutions, and thus it may be conservative.[7] When oil is found in an LDC, it becomes wealthy without all the deep changes of society caused by the Grand Transition, and the process of changes may even be reversed. When oil is found in a DC it also keeps its institutions.

Half of the OPEC countries are in the MENA region. This gives spatial effects from neighboring countries with similar culture/religion and language, which in MENA are the old and strong traditions of the Arab/Muslim world. Ten MENA countries are not OPEC members,[8] but they have many links to the OPEC economic zone, and thus they are deeply affected by the said spatial effects. This means that oil revenue will help preserving the traditional kingdoms and other authoritarian regimes in the region.[9]

[7] Chapter 13 in Paldam (2021) shows that political system changes have a J-curve effect on development. Even when the changes are beneficial in the long run they have adverse effects the first 5 to 10 years.

[8] The non-OPEC Arab countries are Bahrain, Egypt, Jordan, Lebanon, Morocco, Oman, Syria, Tunisia and Yemen. Two MENA countries are not Arab: Turkey is counted as a MENA country, though it is a borderline case to the West. Iran is both in OPEC and MENA. Israel is counted as western though is geographically in the MENA region.

[9] When Spain acquired large amounts of precious minerals in the 16th century from its new colonial empire, it did not lead to less absolutism, but rather to a strengthening of the Habsburg emperors. Later when the Netherlands and UK acquired new wealth from trade, the wealth accumulated to a much wider circle.

## 4. The relation between *Polity* and *Vpol* (Period B)

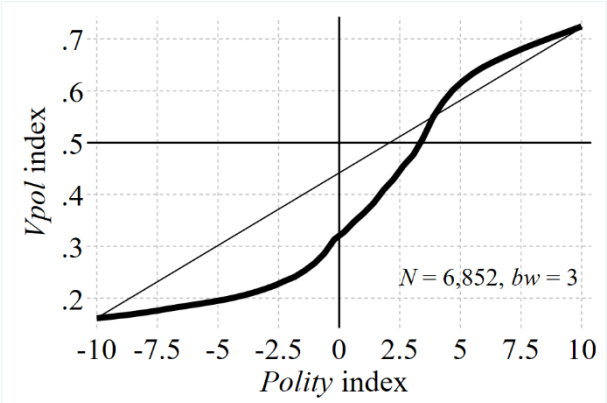
To study the detailed pattern within countries requires a conversion of the indices to the same scale. To link up to prior work the Polity scale is chosen, so *Vpol* (Polyarchy) is converted into *PVpol*. Figure 2 showed that *Polity* and *Vpol* are the two indices with the most different distribution, so the rest of the paper omit the *FH* index. This allow the period studied to be extended backwards from 1972 to 1960.

Section 4.1 presents the conversion. Section 4.2 discusses measurement uncertainty, while section 4.3 illustrates the lack of a natural scale. Finally, section 4.4 looks at country groups.

### *4.1 Non-linear relations between the indices*

Figure 7 estimates how well *Polity* can explain *Vpol* by a kernel regression; see also Paper #2. A useful conversion formula has to be transparent and easy to use. Thus, it has to be linear. The figure shows that any linear conversion must be an approximation. A linear conversion requires two fixpoints. Table 7 reports the choice that fixes the two steady states on Figures 5b and c. The Appendix reports an alternative conversion, and I have tried a few more possibilities.

Figure 7. *Vpol* explained by *Polity*




Note: The 95% confidence intervals are so narrow that they are hidden within the curve

Table 7. Fixpoints for the conversion, where *Vpol* becomes *PVpol* in the Polity scale

| Conversion | Fixpoints | | Original scale | | Converted |
|---|---|---|---|---|---|
| | *Income* in steady states | | *Polity* | *Vpol* | *PVpol* |
| Fixing the two | Traditional | 6.5 – 7 | -2.5 | 0.27 | -2.5 |
| steady states | Modern | 10.5 - 11 | 8.5 | 0.82 | 8.5 |
| Conversion formula: *PVpol* = 20 *Vpol* – 7.9 | | | | | |

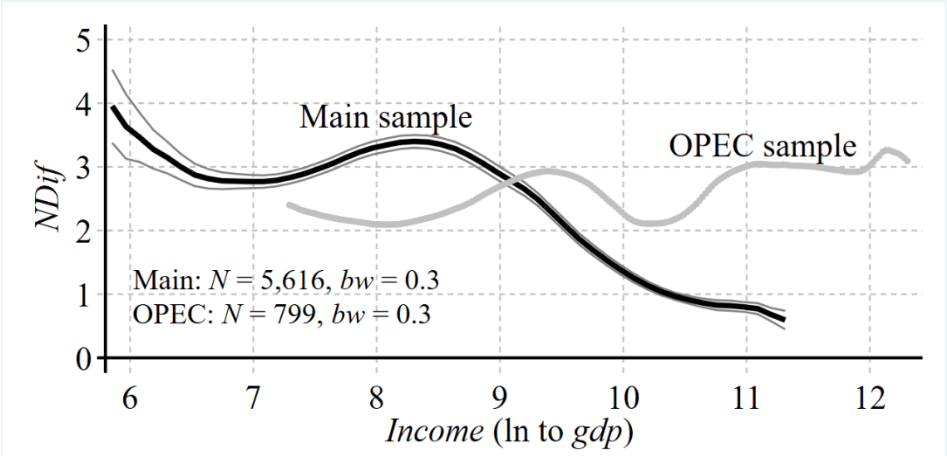
Table 8. Averages and numerical averages for *Dif* = *Polity* – *PVpol*

| | All observations | | |
|---|---|---|---|
| | *N* | Avr | Navr |
| Unified data | 7,651 | 0.336 | 2.514 |
| Country averages | 155 | 0.277 | 2.707 |

Note: The conversion is made for the Main sample. The text argues that the 'Navr' column reports estimates of the measurement uncertainty.

The Appendix reports the average (avr) and the average of the numerical values (navr) for *Polity* and *PVpol* for all 155 countries. Table 8 reports the averages of two averages. The experiments with conversion formulas suggest that there is a trade-off: If the conversion formula reduces the average the numerical average increases. The conversion used is my preferred compromise. Thus, the average numerical difference is about 2.5-3 Polity points. This is a key finding in the paper. Figure 8 shows that the difference is larger in LDCs, with *income* below 9, where it is three. It falls as countries become democracies at higher *income*. Even when the indices have the top-anchor problem, they do converge in the Main sample to just below 1. In the OPEC sample, there is no stabilization.

Figure 8. The numerical difference $NDif = |Polity - PVpol|$ as a function of *income*




*4.2 Interpreting the numerical difference of 2-3 polity points: Measurement uncertainty*

The aggregation of diverse micro data into macro numbers is only unique in rare cases. Think of the price index. A literature has proved that the perfect price index does not exist;[10] it can only

[10] The general proofs of non-perfection of any price index are given in Eichhorn and Voeller (1976). The reader may recall that the gray zone is the gap between the Laspeyres and the Paasche indices, where any average may be chosen. The gray zone can be reduced by reducing the interval between the polling of the baskets, but it should include the adjustment to the price changes, so the interval should not be too small.

be measured up to a gray zone. The zone is small in the short run, so useful indices do exist. Arrow (1963) proves that no political system can make a perfect aggregation of preferences, but there is surely a range of good institutions that can be combined – each has advantages and disadvantages, so compromises have to be made. Therefore, it is no wonder that political systems differ, even if they strive to be democratic; see Christoffersen *et al.* (2014) for a case study of two fine but very different democracies.

Consequently, a democracy index comes to aggregate diverse and often qualitative and assessed indicators. Both the choice of indicators, the assessments and the aggregation have many variants. Here the gray zone of measurement uncertainty is surely larger than for the price index.[11] Consequently, the limits to precision are wide. Even if one measure is chosen, a range of equally good measures is possible, giving a wide gray zone. My conjecture is that most of the (almost) three points represent the gray zone. It should be added that when you compile so much data there will be errors including coding errors, but a sprinkle of random errors matter little for the average, and thus errors only increase the observed gray zone marginally.

The two groups behind the indices are able and diligent researchers, who have spent years of work assessing/measuring the level of democracy in the world. From the two manuals, it is clear that they do not include exactly the same indicators, but they have surely included the ones they think are the most relevant, after careful deliberation. Section 5 will show that the choices made have led to different outcomes for many countries, even when the grand pattern is quite similar.

There is an additional evidence that three is an important number. Recall the Jumps Model from section 3.2. Paldam (2021, Cpts 5 and 6) uses the model to explains the 262 larger jumps in the *Polity* index in a dataset where $N$ =7,992. All of these jumps are also covered in articles (or notes) in *the Economist*, so they are 'real' events. Seen in the perspective of development, the triggering events causing the jumps are random. Larger jumps are more than three Polity points. The model cannot explain the smaller jumps. The measurement uncertainty suggests that the small jumps are dominated by randomness.

The *PVpol* index changes every year. This is a consequence of the compilation method, but most of the changes are much less than three points. In spite of the different structure of the *Polity* and the *Vpol* series, they have virtually the same autocorrelation, which is about 0.9. Thus, the seemingly higher precision of the V-Dem data may represent meaningless precision.

[11] Gründler and Krieger (2021b) is a study of the aggregation problem using democracy indices as the illustration. They also show that the problem is substantial.

### *4.3 Interpreting the nonlinear conversion curves: No natural scale*

Most economic variables have a natural scale. When a price index goes up by 1% it means that the average price increases by 1%. However, political system indices have no natural scale. The indices are anchored at the two extreme ends of full authoritarianism in one end and full democracy in the other, but apart from these anchors, the scale is fairly random.

The transition curve predicts that democracy indices have different levels in low and high-income countries, but it is an important question, what it means, if changes are similar. The two pairs of examples reported in Table 9 illustrate this question. Each pair is two countries with (almost) the same change by one index. Both examples compare a change in a DC and a change in an LDC. The latter is chosen so that the reader may know something about the case.

Table 9. Two pairs of examples

| Pair 1: Case of (almost) same *Vpol* change | | | | | | Pair 2: Case of same *Polity* change | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sweden | | | Ethiopia | | | Belgium | | | India | | |
| Years | *Vpol* | *Polity* | Years | *Vpol* | *Polity* | Years | *Polity* | *Vpol* | Years | *Polity* | *Vpol* |
| 1970 | 0.775 | 10 | 1990 | 0.158 | -8 | 2005 | 10 | 0.882 | 1974 | 9 | 0.574 |
| 1971 | 0.894 | 10 | 1996 | 0.274 | 1 | 2008 | 8 | 0.899 | 1976 | 7 | 0.406 |
| *Dif* | 0.119 | 0 | *Dif* | 0.116 | 9 | *Dif* | -2 | -0.017 | *Dif* | -2 | -0.168 |
| P-scale | 2.4 | | | 2.3 | | P-scale | | -0.34 | | | -3.36 |

Ethiopia 1990-96: Marxist-Leninist military dictator lost after civil war to People's Democratic Front coalition that introduced (free) elections. India 1974-76: The government of Indira Gandhi declares state of emergency.

Pair 1 shows that the *Vpol* change in Sweden 1970-71 is similar in size to the change in Ethiopia 1990-96, where a Marxist military dictator was defeated by a national coalition that established a multi-party system with national elections. Whatever happened in Sweden is surely a much smaller system change. The two changes are very different in *Polity*.

Pair 2 shows that by *Polity* the change in Belgium 2005-8 is the same as the change in India 1974-76, where the government of Indira Gandhi declared a state of emergency, which permitted her to depose all state governments that did not come from the Congress Party. What happened in Belgium was surely a smaller political system change than what happened in India. The two changes are different in *PVpol*.

### *4.4 Do the projects treat country groups differently?*

Table 10 looks at all 155 countries divided in the usual 6 country groups. The Appendix reports the classification.

Four of the country groups are treated significantly different by the two indices. The

Polity-group gives relatively low scores to MENA countries, while the V-Dem-group gives relatively low scores to Latin American and Asian countries. As expected, *Polity* is higher in the West.

Table 10. T-test for equality of the country averages for *Dif* = *Polity* − *PVpol*

| | *N* | *Polity* | *PVpol* | *Dif* | t-test % | Result |
|---|---|---|---|---|---|---|
| Africa, Sub-Saharan | 2,173 | -2.04 | -1.81 | -0.23 | 12.7 | Not different |
| Asia incl. Mauritius | 1,148 | -0.00 | -0.77 | 0.77 | **0.3** | *PVpol* low |
| Latin America | 1,220 | 3.45 | 1.91 | 1.54 | $\mathbf{2.8 \cdot 10^{-8}}$ | *PVpol* low |
| MENA, Middle East and North Africa | 860 | -5.66 | -4.19 | -1.46 | $\mathbf{2.6 \cdot 10^{-11}}$ | *Polity* low |
| OPEC (half the countries are MENA) | 799 | -4.11 | -3.14 | -0.97 | **0.02** | *Polity* low |
| Socialist/Post socialist | 972 | 1.08 | 0.96 | 0.12 | 69.1 | Not different |
| West incl. Israel | 1,306 | 9.16 | 8.47 | 0.69 | $\mathbf{5.1 \cdot 10^{-7}}$ | *PVpol* low |

The country groups follow the World Bank classification from around 1980-2000. The t-test is the p-value in % for the two-sided test, which assumes that the standard deviations are the same. If the same analysis is made on the 155 country averages, the pattern is similar, but at a much lower level of significance.

The two most deviating middle-income country groups are at much the same *income* level, but they have rather different political systems. Latin American countries are mostly democratic, but they also have some military regimes. *Polity* treats them more leniently. The Arab countries that dominate the MENA group have either traditional Kingdoms or military regimes. *PVpol* treats them more leniently. Eight of the MENA countries are also OPEC countries, so the t-test is also made for the OPEC sample. The OPEC result is similar to the MENA result, but the test result for OPEC is weaker.

## 5. Countries compared for *Polity* and *PVpol* (Period B)

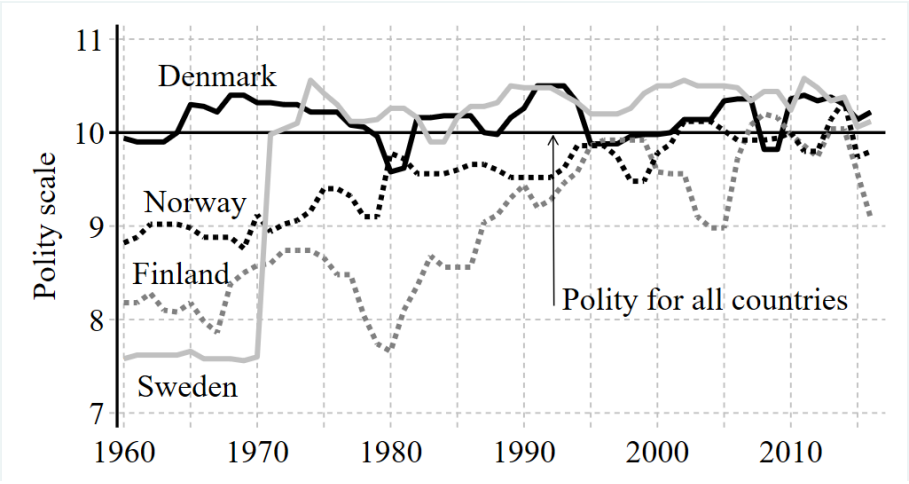
This section looks at country cases to find out where the differences between the two indices are. The Appendix reports all averages and numerical averages as well as the correlations between the two series. This allows a selection of the cases where the differences are largest. The discussion distinguishes between DCs and LDCs as before. Sections 5.1 and 5.2 gives a few cases from DCs. Here the differences are relatively small. Section 5.3 looks at LDC-cases where the largest numerical averages occur. The average (within-country) correlation between the two indices is 0.69, but this number varies a great deal. Section 5.4 looks at LDC-cases where the correlation is negative.

### *5.1 The high-end difference illustrated by the Nordic story*

As discussed, *Polity* converges to ten in the high-income countries of the Main sample, and as shown by Figure 7 the variation falls from three to one. The V-Dem indices also converged to democracy following the same path. However, the variance in *PVpol* remains well above zero.

Figure 9 shows the paths of the two democracy indices in four Nordic countries from 1960 to 2016. They are known as fine democracies and they are scored at 10 points throughout the *Polity* index. The V-Dem *Polyarchy* (*PVpol*) index seems to contain a great deal of extra information, but there is a problem: All the extra information is within two and a half points from the *Polity*-line at 10. Table 11 reports that the six pairs of the four countries are at most 1.1 *Polity* points – that is well below 2½ points.

Figure 9. The path of *Polity* and *PVpol* in Denmark, Finland, Norway and Sweden




Note: All four V-Dem curves use the Polity scale.

Table 11. Do the four Nordic countries have different levels of democracy?

| For *PVpol* *Dif*(ference) | *N* | Reg. (1) *Dif* = *Con* *Con*(stant) (t-ratio) | Reg. (2) *Dif* = *Con* + *Lag Dif*$_{-1}$ *Con*(stant) (t-ratio) | *Lag* (t-ratio) |
|---|---|---|---|---|
| Denmark − Finland | 57 | 1.143 (11.8) | 0.091 (1.2) | 0.911 (16.9) |
| Denmark − Norway | 57 | 0.624 (10.0) | 0.095 (1.6) | 0.829 (11.2) |
| Denmark − Sweden | 57 | 0.360 (2.5) | -0.007 (-0.1) | 0.910 (19.8) |
| Finland − Norway | 57 | -0.520 (-7.6) | -0.078 (-1.5) | 0.851 (11.9) |
| Finland − Sweden | 57 | -0.783 (-6.6) | -0.132 (-1.8) | 0.869 (14.2) |
| Norway − Sweden | 57 | -0.264 (-2.4) | -0.065 (1.2) | 0.858 (14.0) |

Regression (1) is the constant in a regression with no explanatory variables. Regression (2) is the same when the lagged endogenous is added.

However, the difference is based on 57 observations. When 2½ is divided by $\sqrt{57} = 7.6$, it becomes 0.3 and then the countries differ as is demonstrated by regression (1) in Table 11. However, there is less information in the series than it looks at first, due to their large autocorrelation estimated in regression (2). When the difference is corrected for the lagged endogenous, none of the country pairs are significant. Thus, it is highly dubious what we have learned about the four Nordic countries from the extra information in the V-Dem series.

A similar story can be told about other western countries with a *Polity* score at 10, where the *PVpol* index tells a seemingly richer story. A7 of the Appendix reports the same analysis, as done above for the four Nordic countries, for five Anglo countries: Australia, Canada, Ireland, New Zealand and the UK. It tells the same story, and so do the observations from the Benelux countries, Austria and Switzerland.

From the transition curves of Figure 5 it is clear that when countries becomes high-income countries, they reach a steady state growth path, where 'everything' is close to equilibrium, so structural changes become small. *Polity* certainly shows that also the Political system reaches stable democracy. However, the V-Dem project report that system changes continue, but now it is rather a small flutter.

### *5.2 The 23 DCs: Three cases*

In these countries, the numerical county average for navr(*Dif*) is about 1.2, and it exceeds 1.5 in six countries,[12] two of which are displayed. The correlation giving the trends cannot be calculated in 16 of these countries, as the *Polity* index is constant at 10.

The V-Dem Institute is located in Sweden. Figure 9 reported the case of Sweden, which

[12] Greece, Portugal and Spain are borderline cases with income well below the average at the start of the period. This also applies to Israel reported on Figure 12a.

has a strange jump of 2.4 P-points in 1970 (see Table 9).

The *Polity* index is made by the Institute of Systemic Peace in the USA. The USA on Figure 10a has low values of the *PVpol* index before 1980 probably due the (informal) restrictions on black voting and discrimination in general, especially in the South. The democratic setback around 1970 in the USA reported by *Polity* is not seen in the *PVpol* index. If the size of the regional problem had been weighted with the size of the country, the deviation from democracy would have been smaller.

The largest nav(*Dif*) is in Switzerland (see Figure 10b), and it is easy to explain. The big jump in the *PVpol* index is due to women's suffrage that was made general in 1972. The *Polity* index has scored Switzerland at 10 ever since 1848, when the modern country was formed. Polity does not bother about women's rights, but then for long it was no issue in Switzerland as women had the same political orientation as 'their' men! However, this changed in the 1960s, so that women's suffrage became an issue, and in 1972 women were permitted to vote.

Figure 10a. The USA

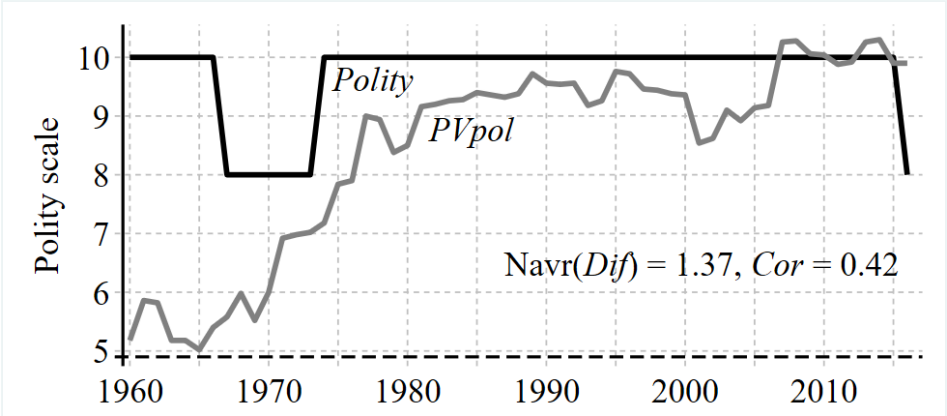



Figure 10b. Switzerland

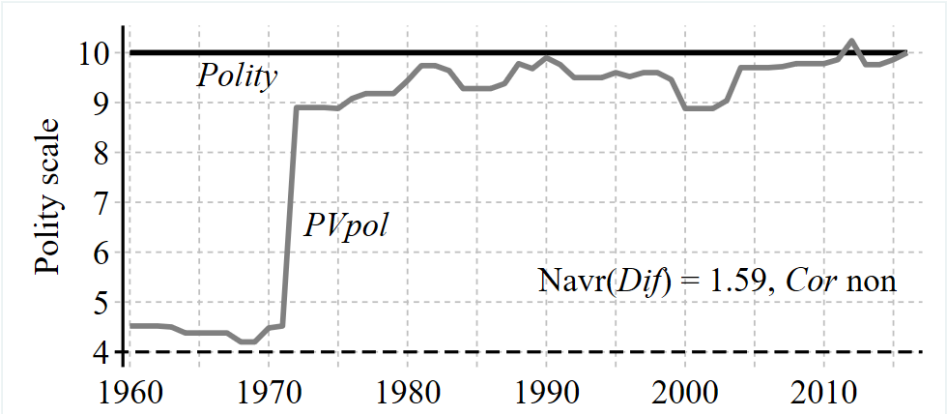
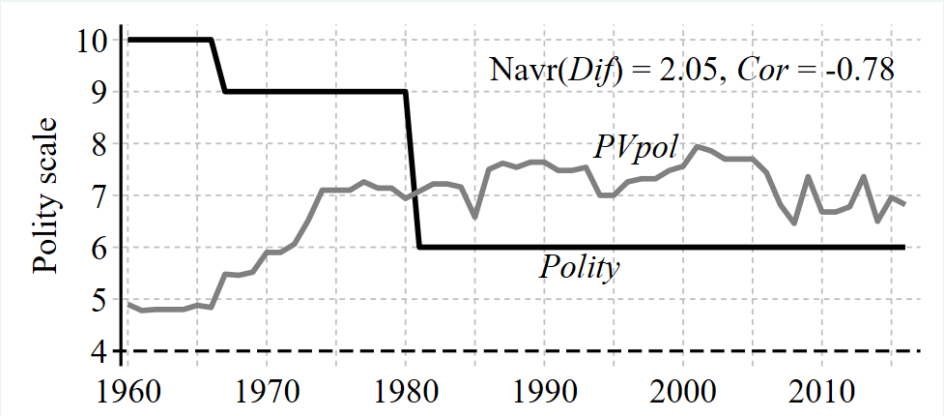


Figure 10c. Israel




Israel (Figure 10c) was an LDC in 1960, but is now a DC. It tried hard to have a western democratic system from the start, when the country was poor and conditions were adverse. In 1960 when the data used starts, Israel was a normal democracy by Policy. Since 1967 it has been difficult country to classify. Israel conquered the West Bank in 1967 and ruled the new territory by the military, but gradually many Jews moved into the West Banks in settlements that became a near-normal part of the country. A reform process since then has given some of the West Bank a measure of independence as a Palestinian home-rule area. However, the main reason for the negative correlation is the period before 1975, which should be less controversial.

### *5.3 The 133 LDCs: The three largest differences of the Polity and PVpol indices*

For the less developed countries, the largest differences occur for Malaysia, South Africa and Colombia. The three cases are shown as Figures 11a to c. The first two countries have a level difference only. They are both countries with two main groups, where the minority dominate economically and the majority politically – the latter only from 1994 in South Africa.

Figure 11a. Malaysia

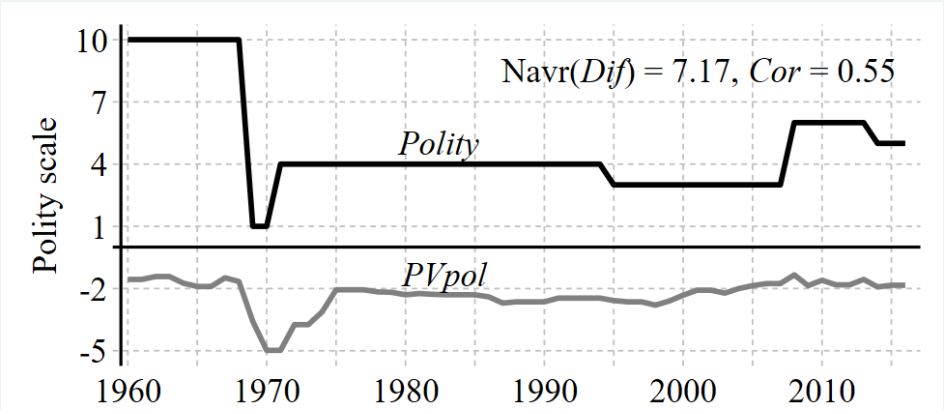


Figure 11b. South Africa

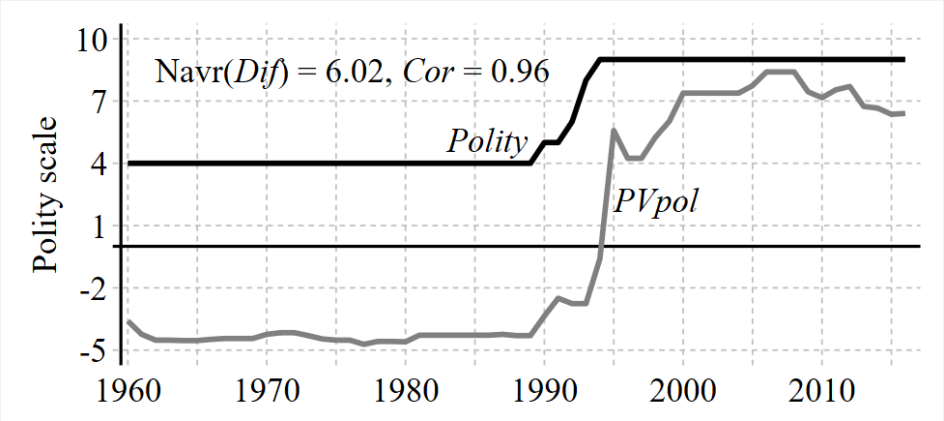
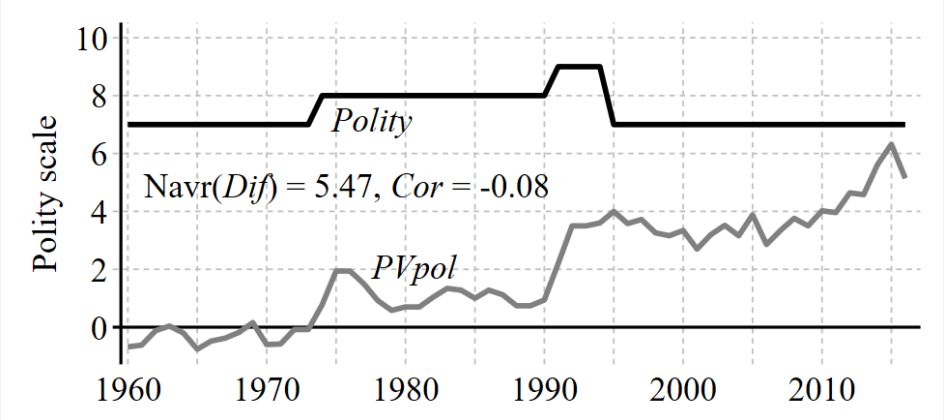



Figure 11c. Colombia




The case of Colombia is more problematic. In Colombia, there is a large difference between the two indices, and furthermore they are not correlated. It is even worse in Jamaica on Figure 12a, where the correlation is negative. It is amazing that two competent teams trying to measure the degree of democracy can reach such different results as they do for Colombia and Jamaica.

*5.4 The 133 LDCs: The three most negative correlations of the Polity and PVpol indices*

Table 3 showed that while the between-countries correction is 0.93, the average within-country correlation is 'only' 0.69. In six countries, the correlations are negative: One is Colombia (Figure 11c) it is just below zero, as is also the case in Cuba and Armenia. The second is Belgium, but it is due to one small jump in *Polity*. Thus, the truly negative correlations are Israel, as already discussed, and Jamaica, Zimbabwe and Vietnam.

Figure 12.a Jamaica

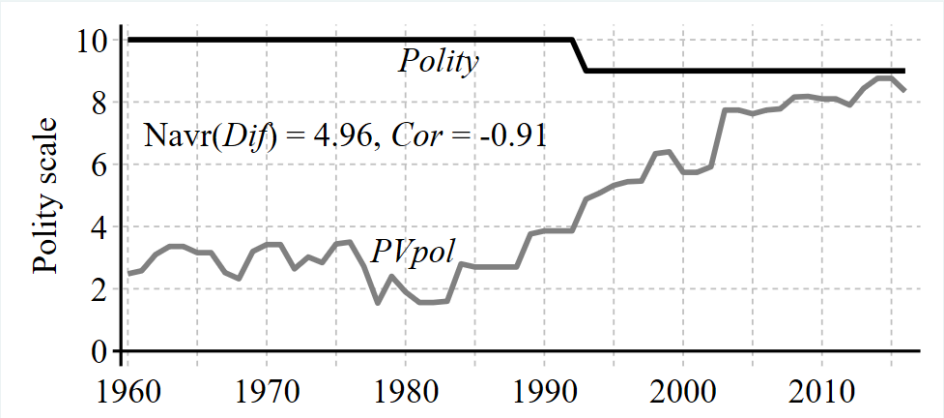



Figure 12b. Zimbabwe

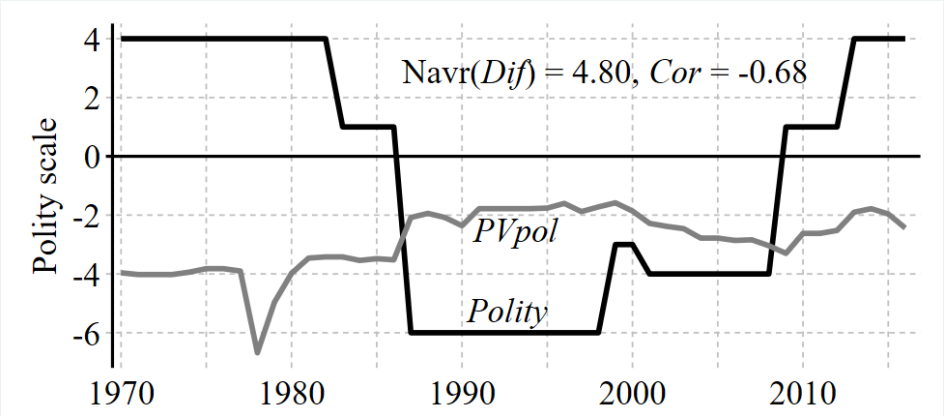
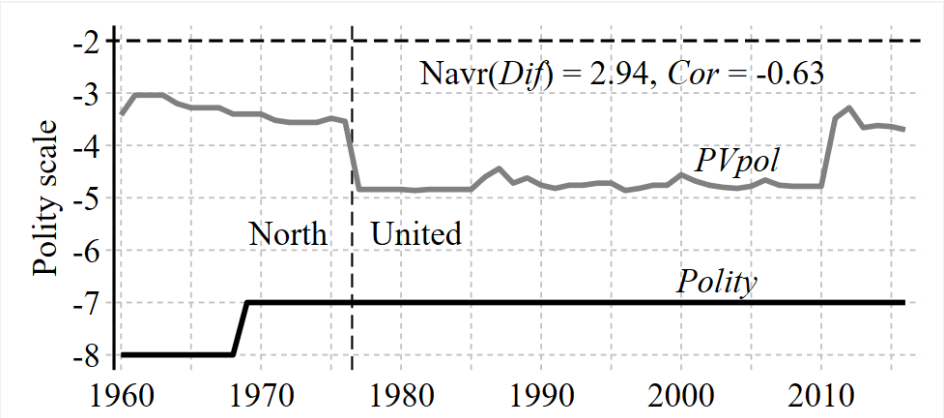



Figure 12c. Vietnam (North Vietnam before unification)




Zimbabwe and Vietnam also have dramatic histories. For Zimbabwe, the story told by *Polity* does not seem to reflect the history of the country. For Vietnam, the main difference is for the early 1960s where the two indices differ by 5 points. Here *PVpol* seems rather benign.

The disaggregated *Polity* and V-Dem data allow us to pinpoint the differences in the underlying indicators, but this is a project that exceeds this paper.

## 6. Conclusions

The first two sections in the paper showed that the eight indices analyzed have the same grand pattern, over time and *income*. When many observations are averaged, measurement uncertainty and errors vanish, revealing the deep differences. That is, we should see the effect of conceptual differences – they proved to be small.

All correlations between democracy indices are high, and the within-project correlations are even higher. It follows that the conceptual differences are less important than the differences in the assessment packages used by each project. These are important conclusions, as it means that the various indices end up measuring the same basic process of democratization. The grand pattern in these indices is really strong.

The last two sections looked at the detailed pattern. When *Vpol* (Polyarchy) from the V-Dem project is converted to the Polity scale, the average numerical difference is almost three *Polity* points, though less in the developed countries. I take this difference as an indication of the gray zone in our knowledge of the democracy level in any country. I think that it is important to recognize that there is a lot we cannot know. Consequently, the indices score the average level of democracy in many countries differently. I have even found countries where the indices are negatively correlated. Thus, if you want to study the level of democracy in a country, it is important to recognize that the measurement uncertainty for any of the indices is substantial, such as 15% of the range of the index.

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**Measuring Democracy Project.** The present paper is paper #1 in my project that consists of four papers

#1. Main paper: Measuring Democracy. Eight indices: Polity, Freedom House and V-Dem

#2. Measuring democracy, 1972-2016. How different are eight democracy indices?

#3. Measuring democracy, 1960-2016. How different are the Polity and the V-Dem indices?

#4. Net-Appendix to: Measuring democracy

The papers are all from 2021. They are available at http://martin.paldam.dk/GT-Main2.php

[13] Contains a detailed reference list of seven pages.

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2020-13 Anna Folke Larsen, Afonso Saraiva Câmara Leme and Marianne Simonsen: Pupil Well-being in Danish Primary and Lower Secondary Schools

2020-14 Johannes Schünemann, Holger Strulik and Timo Trimborn: Anticipation of Deteriorating Health and Information Avoidance

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2020-17 Anna M. Dugan and Timo Trimborn: The Optimal Extraction of Non-Renewable Resources under Hyperbolic Discounting

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2021-10 Martin Paldam: Measuring Democracy - Eight indices: Polity, Freedom House and V-Dem