

Net Appendix to:**The OPEC/MENA/Arab nexus and the missing democratic transition**

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This appendix considers three variables: P , polity, and V , polyarchy, and y , income (ln the real GDP per capita), and one abbreviation ci , for 95% confidence interval. All graphs are made with stata. The kernels are calculated with the command `lpoly`, using the defaults, including the Epanechnikov kernel.

Kernel regressions and frequency distributions are bulky to report, thus the main paper shows only 7 graphs with 26 kernels and 4 graphs with as many frequency diagrams. Also, the reporting of confidence intervals (ci) quickly make the graphs messy, Hence, this Appendix provides 12 additional graphs reporting 70 kernels of which 8 have cis , and 52 are in 6 bundles. In addition, it provides 10 frequency diagrams. The additional evidence supports the conclusions drawn in the main paper.

Democracy indices P and V have no natural scale. As a crude indication of the scale the 22 graphs are provided with half or quarter way lines separating authoritarian and democratic regimes. Polity is the more ‘positive’ index that make more countries democratic. This is evident throughout when the curves or frequency distribution for the two indices are compared.

Section VIII explains how the Paper and the Appendix fit into the project of the author.

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I. Main sample. Income and time kernels with ci's. Period 1950-2018

Figure A1. Transition curves

Figure A1a. Polity, income: $K^P(y, 0.3)$

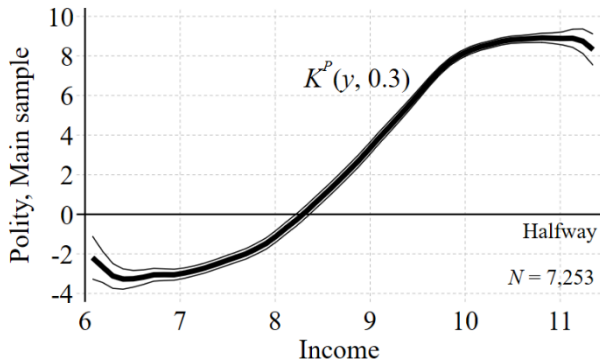


Figure A1b. Polyarchy, income: $K^V(y, 0.3)$

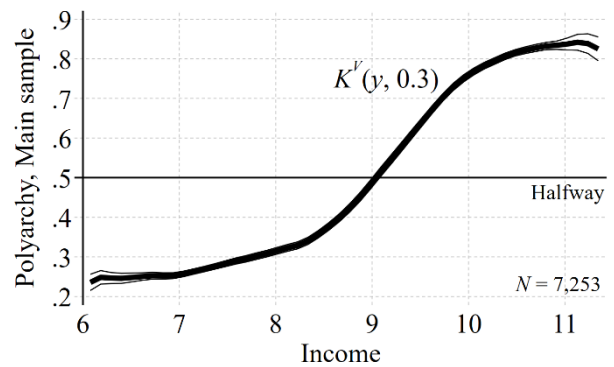


Figure A2. Development 1950-2018

Figure A2a. Polity, time: $K^P(t, 2.7)$

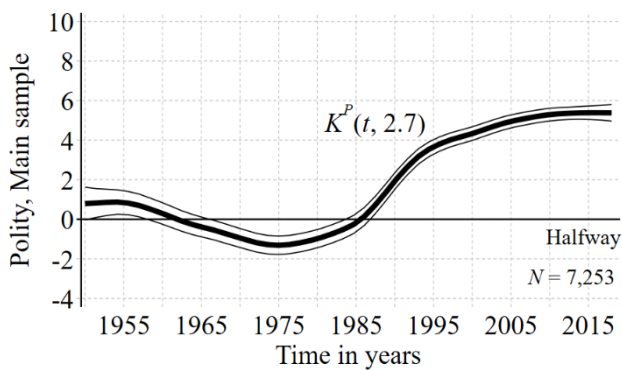
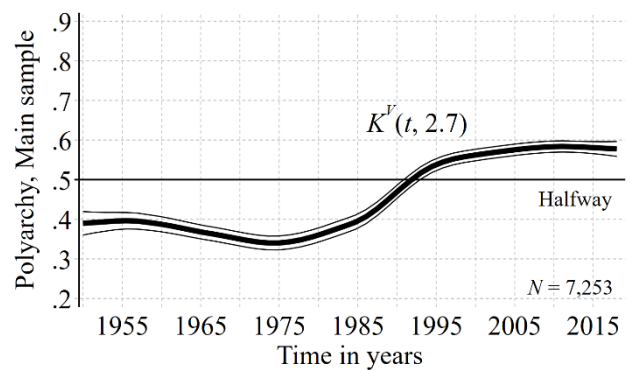


Figure A2b. Polyarchy, time: $K^V(t, 2.7)$



The figures are made to be compared with the 4 curves for the Main sample in Figure 1 and 2 of the main paper. The vertical axis for the two graphs at the left and right sides are the same for easy comparison. The figures call for two comments:

- 1: They look very much like the corresponding figures (Figures 1 and 2) in the main paper. Even when the data for the main sample is much shorter at present.
- 2: The two A1 figures are 'better' than the two A2 figures. The A1 figures look like perfect transition curves, while no theory explains the A2 figures. The confidence intervals are narrower for the A1 figures.

As income grows over time the income and the time graphs have a connection, but the income path is the primary one, while the path over time is a secondary effect.

II. OMA sample. Income and time kernels with ci's. Period 1950-2018

Much the comments made in section I also applies to section II. However, there are a few interesting differences. There is no transition in the A3 figures, and the curves have a smaller range as reflected in the scale at the two pairs of graphs. However, the kernels over time have wider confidence intervals, and hence they explain less of the variation.

The two time kernels do have a period from 1975 to 2014 where they rise, but then they turn. It is nice to see that income curves have their strongest rise before the time curves, so the income rise works on the time curves with a considerable lag.

Figure A3. Income kernels. Missing transitions

Figure A3a. Polity, income: $K^P(y, 0.3)$

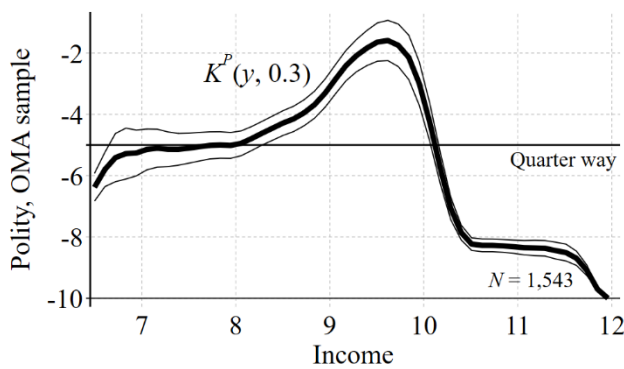


Figure A3b. Polyarchy, income: $K^V(y, 0.3)$

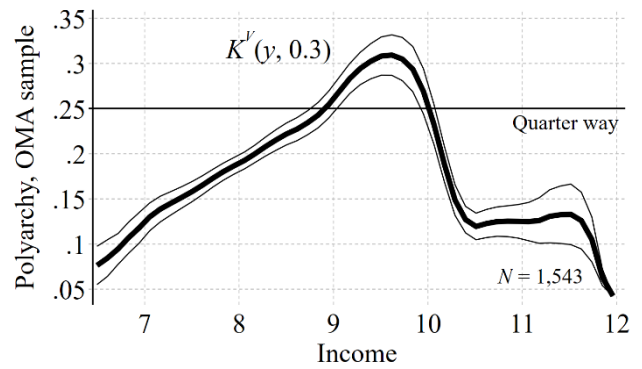


Figure A4. Time kernels. Development 1950-2018

Figure A4a. Polity, time: $K^P(t, 2.7)$

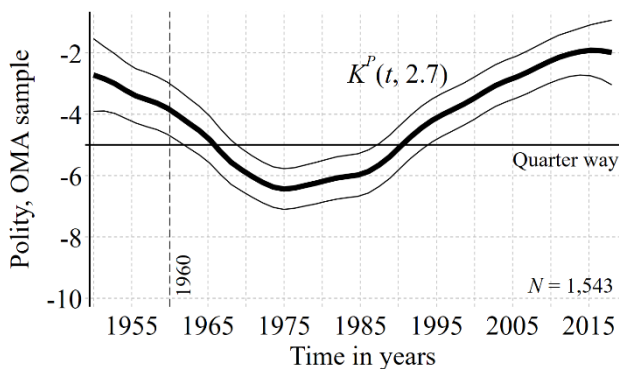
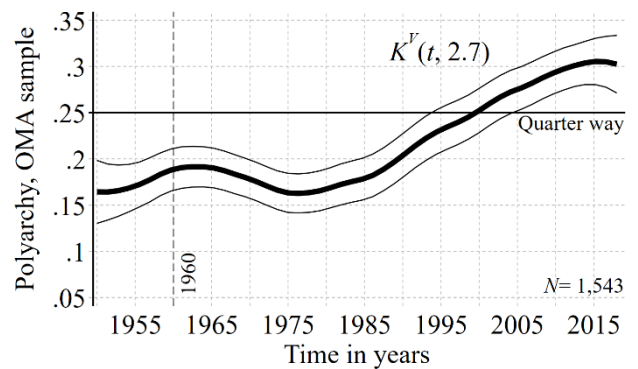


Figure 4b. Polyarchy, time: $K^V(t, 2.7)$



III. OMA sample. Robustness of the income kernels to the bandwidth, bw

As before the kernel-curve from the main paper is highlighted as the bold black curve. Experiments showing the robustness of the $K^P(y, bw)$ and $K^V(y, bw)$ kernels to the bw for the Main sample are reported elsewhere. So, Figure 3 shows the robustness of the two OMA-kernels. The basic form is robust especially the part before the hump. The hump moves a little on Figure 4a, and all curves fall after the hump.

Figure A5. Kernel on Figure A3. Experiments with $bw = 0.1, 0.2, \dots, 0.6$

Figure A5a. $K^P(y, bw)$ for polity from Figure A3a

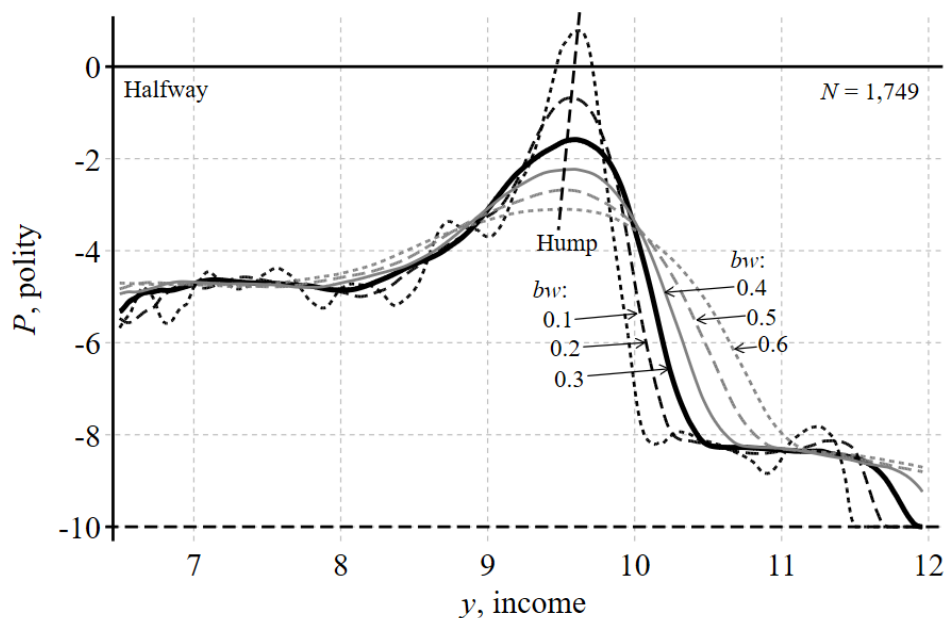
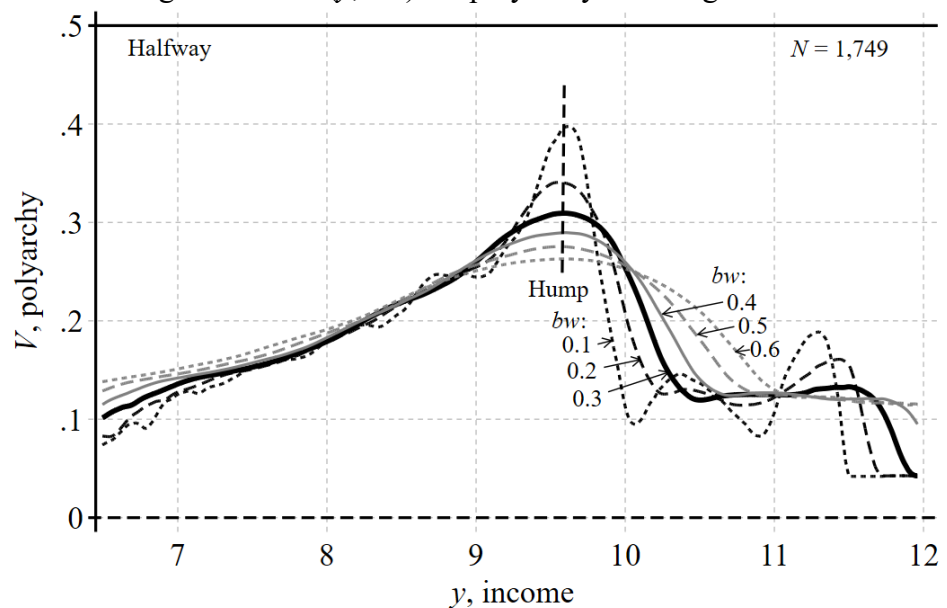


Figure A5b. $K^V(y, bw)$ for polyarchy from Figure A3b



IV. Frequency distribution in % for OMA sample and two groups

The main paper has the frequency distribution for the Main sample and the Arab group. Here the frequency distributions for the remaining groups are reported. They look a great deal like Figure 2 in the paper. As expected, the curves for polyarchy are more skewed to the right than are the polity curves.

Figure A6. OMA group

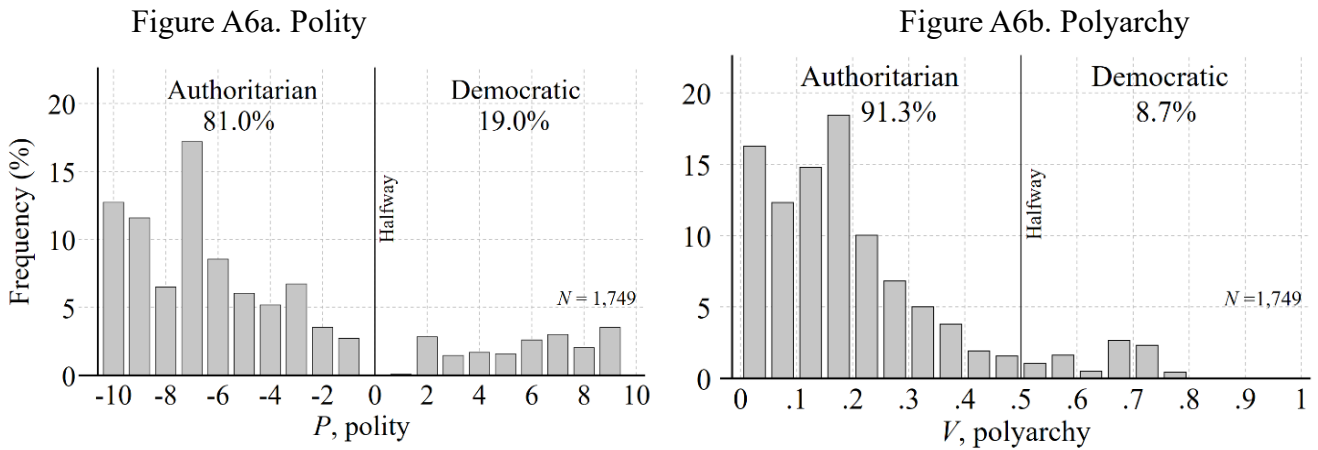


Figure A7. OPEC group

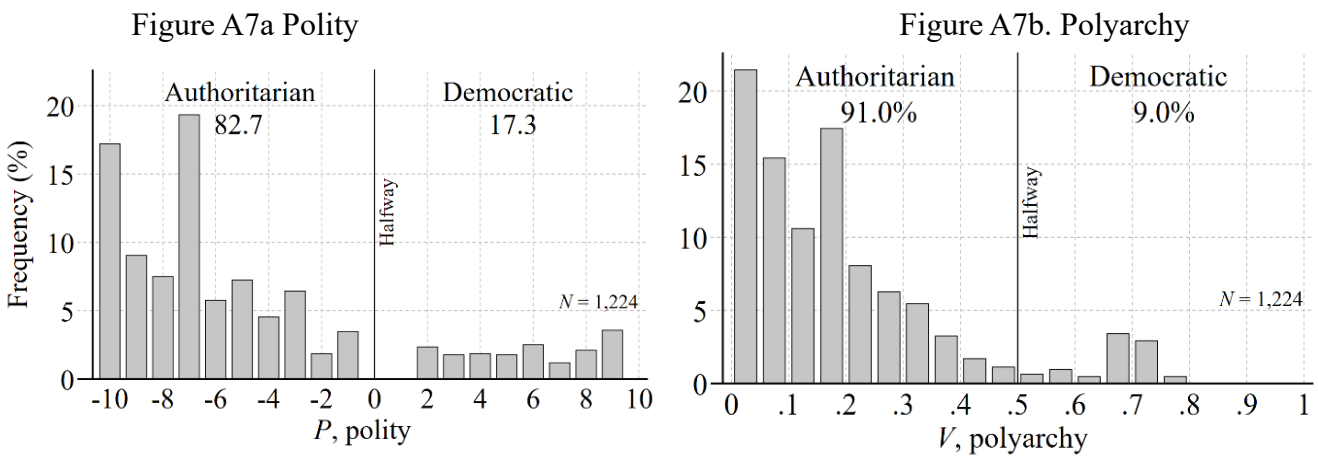
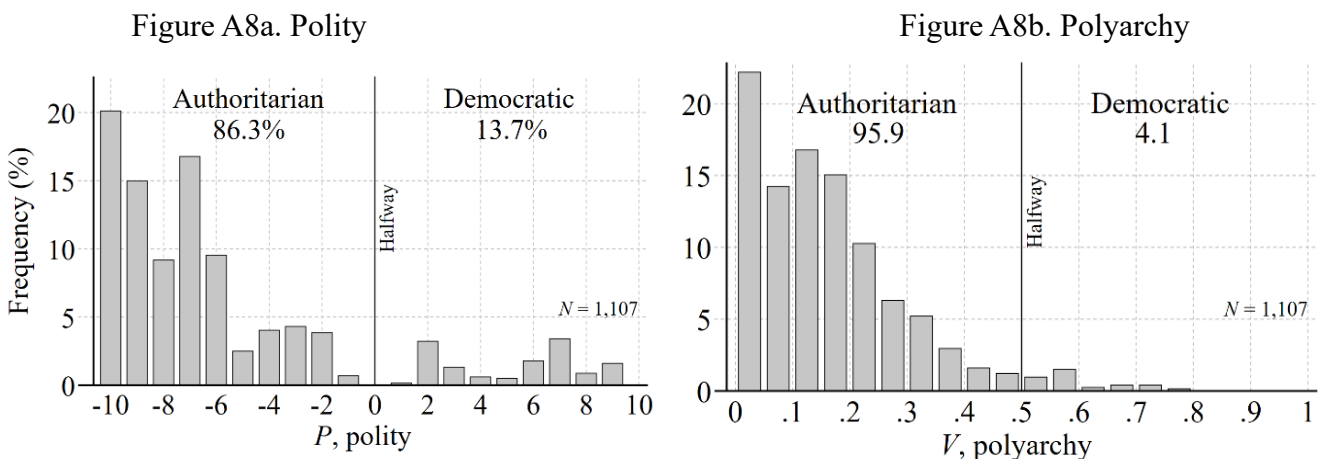


Figure A8. MENA group



V. Frequency distribution of Arab oil countries and other Arab countries

The four graphs show that Arab oil countries are more authoritarian than other Arab countries. This is as predicted by the oil theory in the main paper, and as also found in the larger groups, when the OMA oil countries are compared with other OMA countries.

Figure A9. Arab oil countries

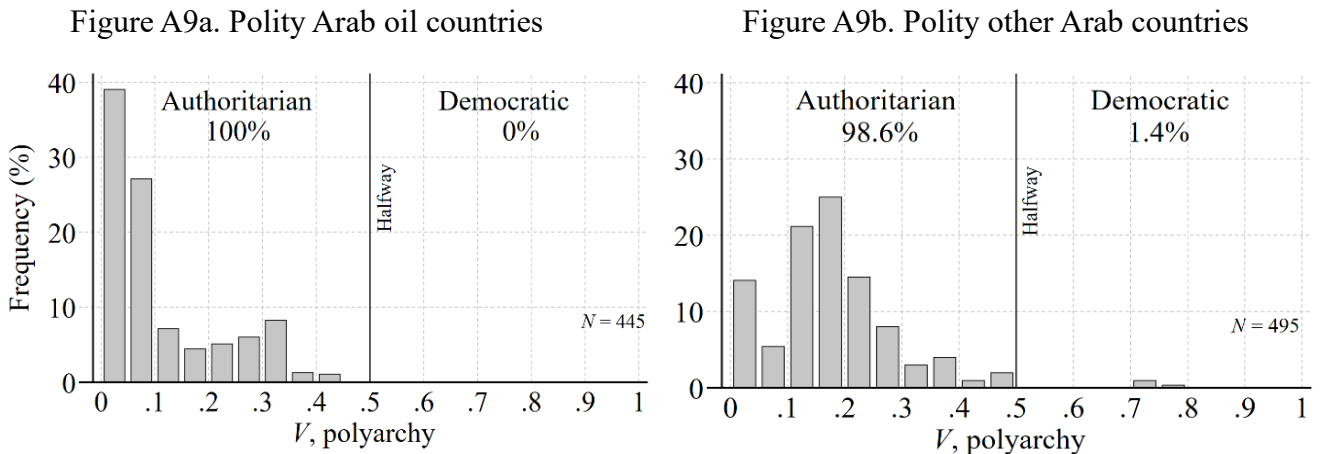
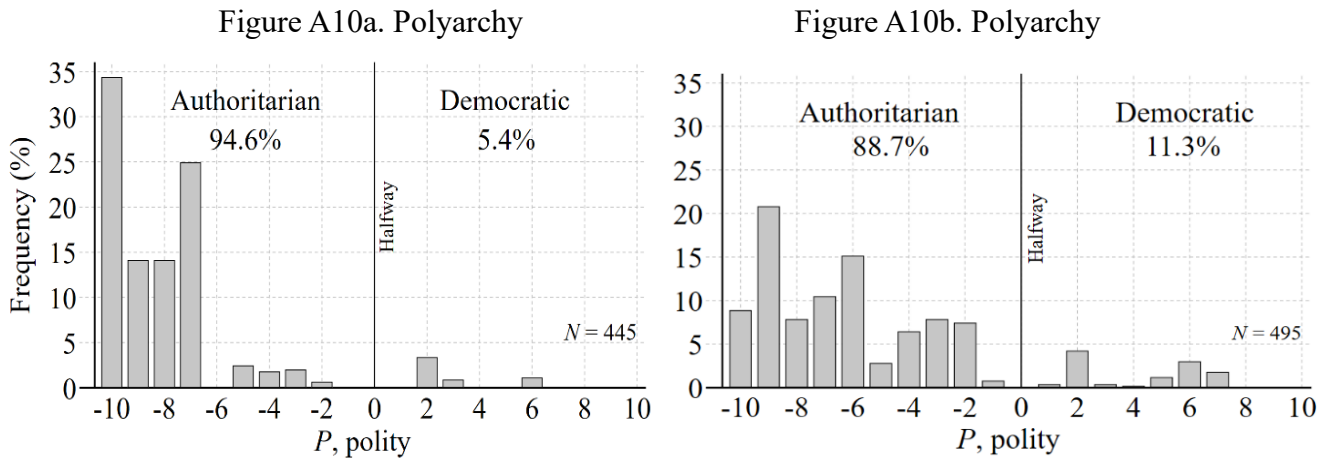


Figure 10. Other Arab countries



VI. Country bundles for the sub-groups: OPEC-only MENA-only and overlap

The three subgroups have 8 to 10 countries, so, they may be sensitive to individual countries. This is examined by the country-bundle technique, which shows the kernel estimated without each country. The two countries that influence the kernel most are indicated. Each bundle covers one curve on Figure 6 in the paper. **Sg1: OPEC-only**. The two bundles are relatively high and have a strong peak.

Figure A11. Bundles for OPEC only sub-group

Figure A11a. Polit. $K^P(y, 0.4)$. Bundle for the eight countries

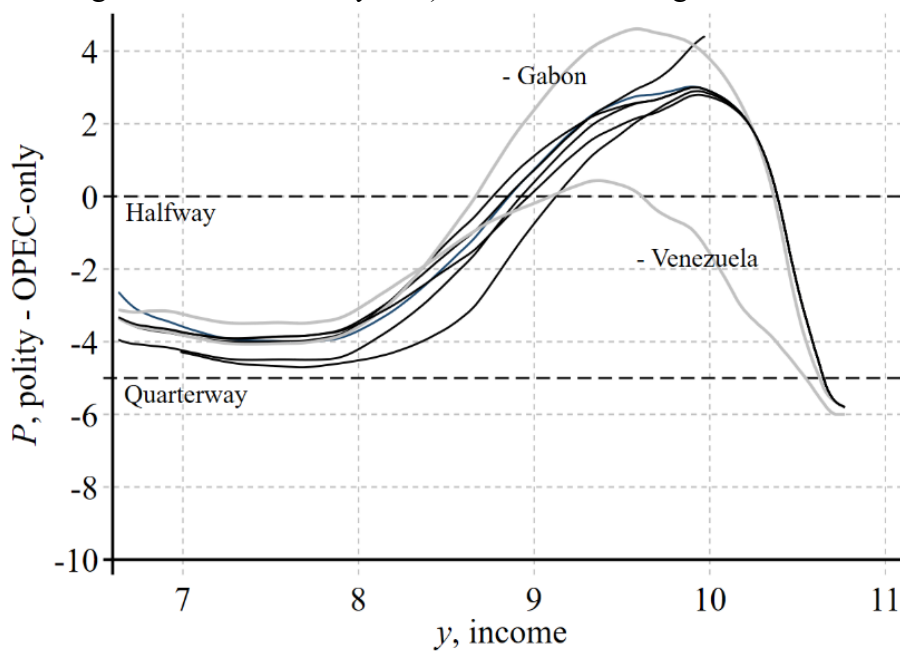
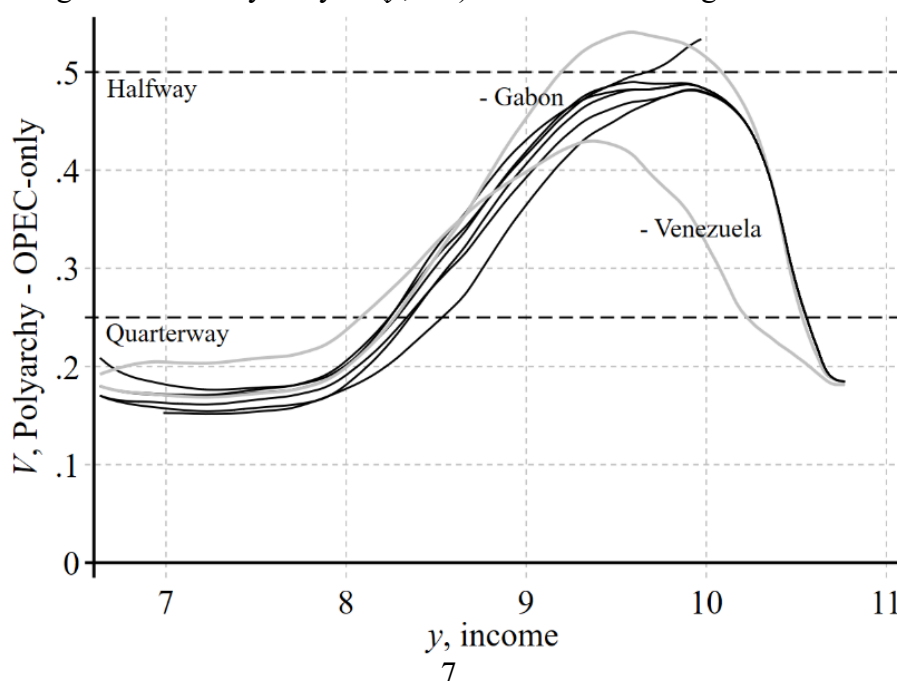


Figure A11b. Polyarchy $K^V(y, 0.4)$. Bundle for the eight countries



Sg2: MENA-only: The two MENA-only bundles are fairly high and have no peak. When the richest country Turkey is excluded the kernels become a bit shorter.

Figure A12. The MENA-only sub-group of eight countries

Figure A12a. Polity $K^P(y, 0.4)$. Bundle for the eight countries

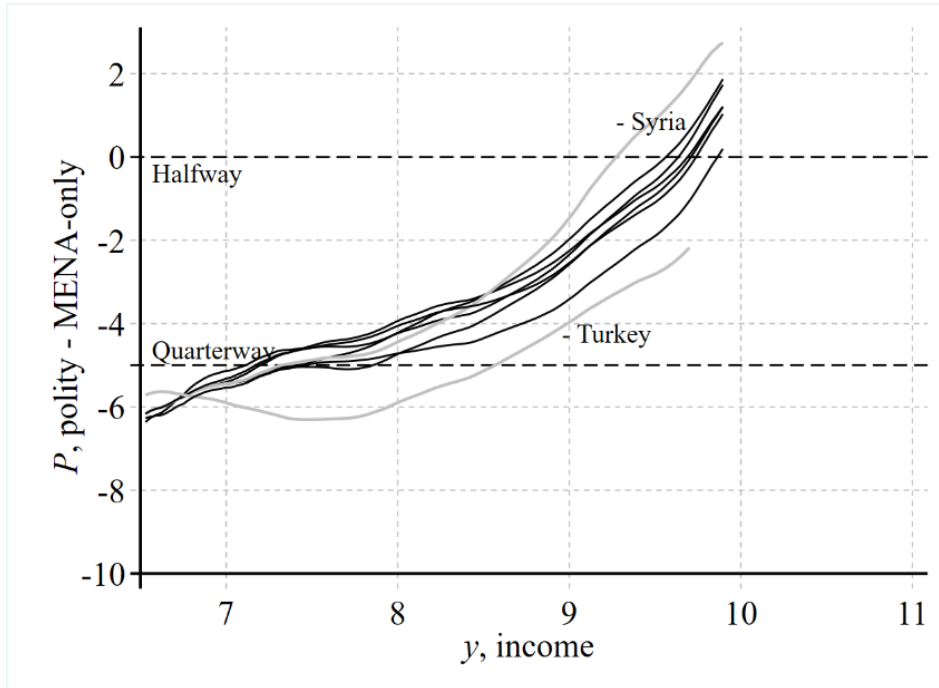
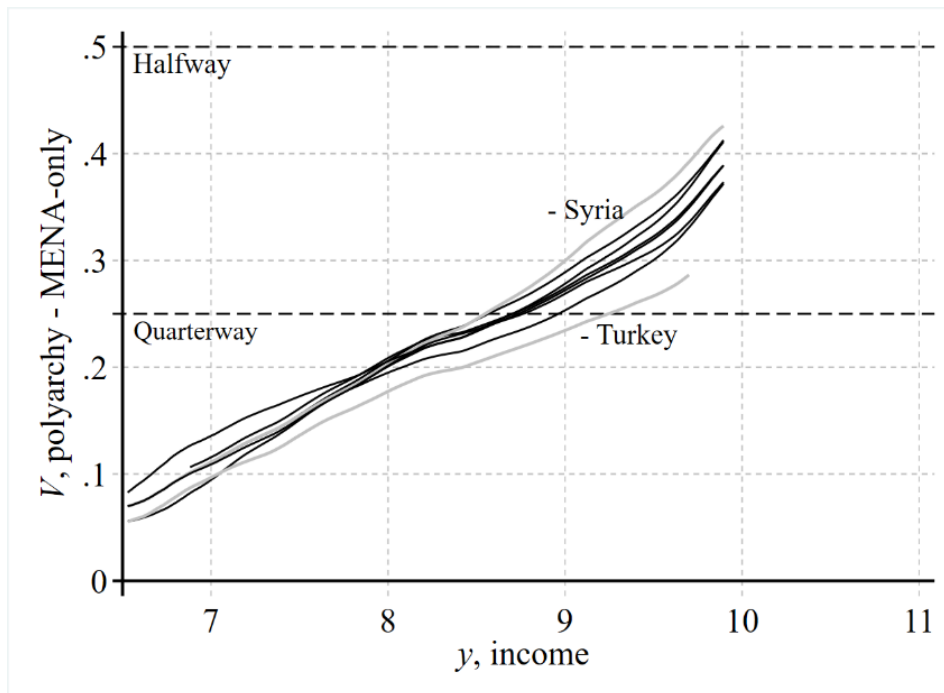


Figure A12b. Polyarchy $K^V(y, 0.4)$. Bundle for the eight countries



Sg3: Overlap. The two Overlap bundles never leave the low quarter of the ranges of the indices. While the hump is clear on Figure A13a it is unclear on Figure A13b.

Figure A13. The Overlap sub-group of ten countries

Figure A13a. Polity $K^P(y, 0.4)$. Bundle for the ten countries

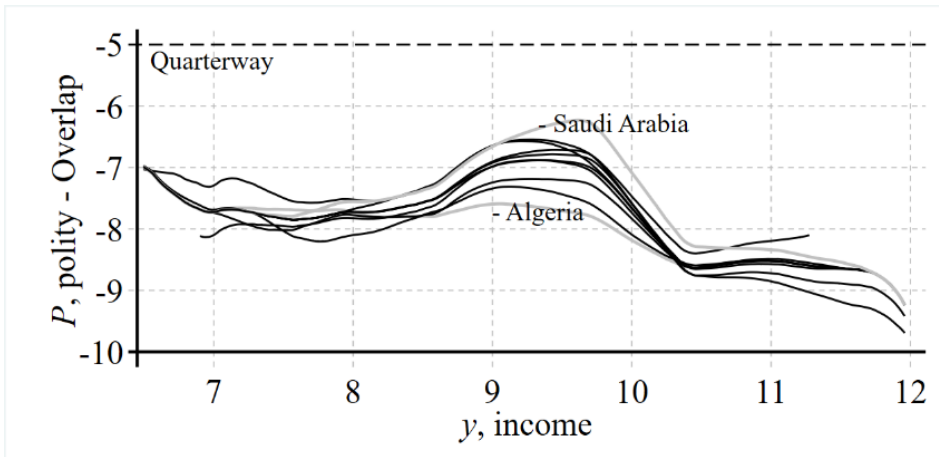
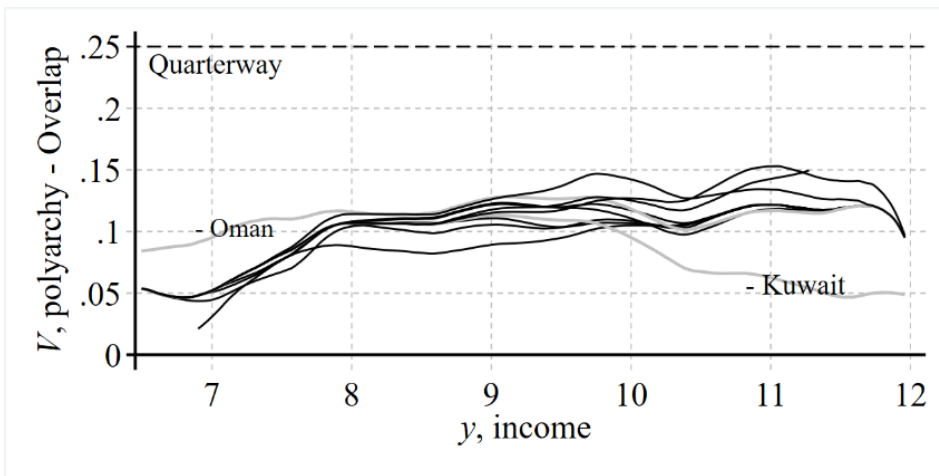


Figure A13b. Polyarchy $K^V(y, 0.4)$. Bundle for the ten countries



VII. Averages over time

Section 2.2 in the paper considers the development over time using kernel regressions with time as the explanatory variable. Figure 14 gives the standard graphs that look much the same as the kernels over time. Each figure shows 4 lines. The thick black line is for all available observations. The moderately thick black line is for the countries with at least 50 observations. The thick gray line is for the countries with at least 60 observations. Finally, the moderately thick gray curve is for 6 countries with all 69 observations (including Iran where one observation is interpolated). Both figures show an increase in the indices from 1980 to 2012, but while Figure A14a has no long run trend there may be a trend on Figure A14b, just like on Figure 2 in the paper.

Figure A14. Annual averages for the OMA sample

Figure A14a. Polity

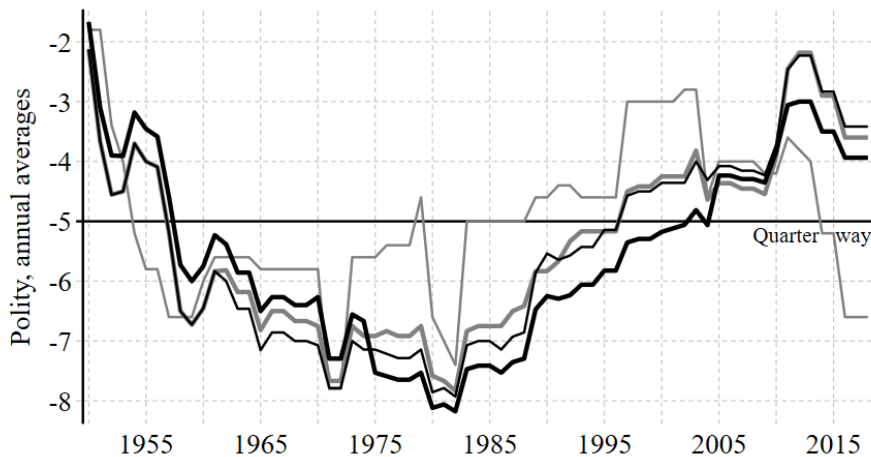
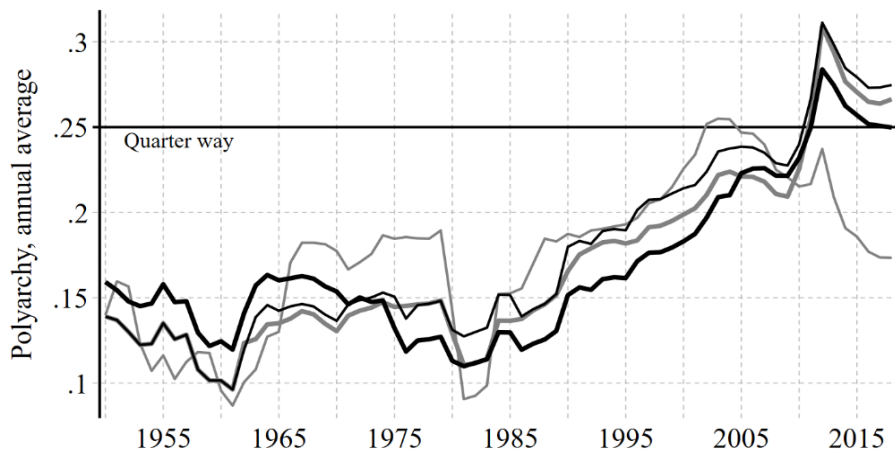


Figure A14b. Polyarchy

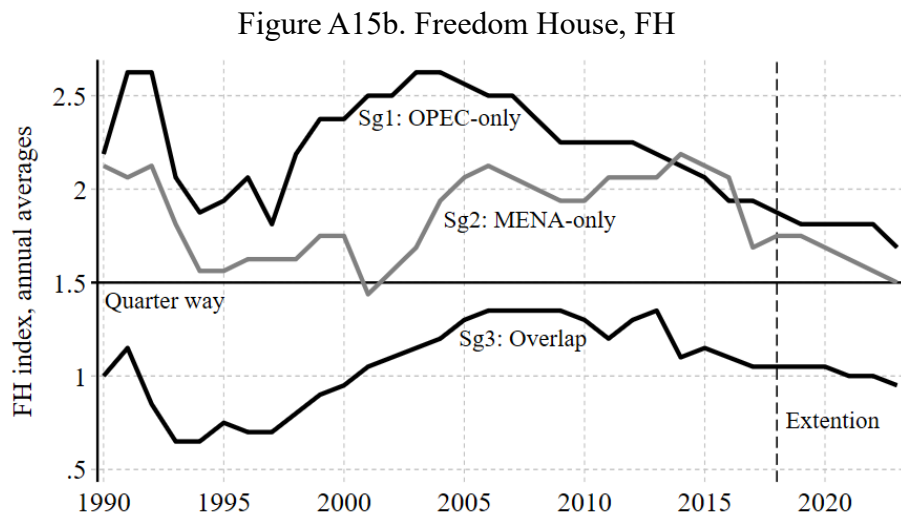
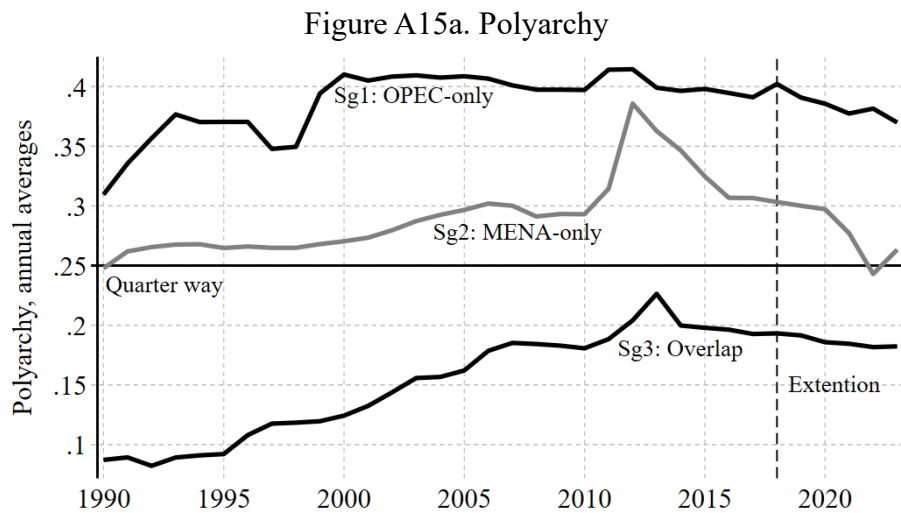


VIII. Extension of the period to 2023

Everything until now is done on the data defined in Table 1 of the paper. However, some evidence exists about the 4 years from 2019 to 2023. The polyarchy index has been updated to 2023, and the Freedom House index – that has not been used until now – is similarly updated. For the period 1990-2023 both indices are complete for all countries in the OMA sample. The Freedom house index has two components: PR, democratic rights and CL, civil liberties. Both are given on a 6-points integer scale, where 7 is the most authoritarian and 1 the most democratic. To make the two Figures comparable the Freedom House index is converted to: $FH = 7 - (PR + CL)/2$ on the graph.

Note that the trends for the two indices are surprisingly different. While the Polyarchy index shows a small fall, the fall is substantial for the FH-index.

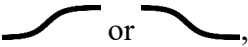

Figure A15. The path of two democracy indices from 1990 to 2023 for the three sub-groups



IX. A short survey of the project of the author

The project started as a cooperation with Erich Gundlach (EG.) and during the next decade it led to a dozen papers, mostly coauthored, which were integrated and updated in the book MP (2021).

The main message is that the skeleton of development is a cluster of highly confluent transitions in most socioeconomic time series. *The Grand Transition* is overlaid with a lot of fuzzy movements of the series, but the average country has a strong long run common trend looking as a transition should. There are surely exogenous shocks as well, but they are scattered throughout the system. The transitions are strong in the main institutional indices as well. Much we would like to see as primary for development is in fact endogenous.

The book looks at the main democracy indices, economic freedom, corruption, and religiosity. Later work looks at human capital, and at relative measures. While the main transition curves look as  or , where the flat sections are for the two steady states, the curves become hump-shaped for the first differences, such as the growth rate.

The book makes considerable efforts to document empirical facts, to study the causality, and the medium-term theory, especially for the democratic transition. The long-run theory briefly summarized in the paper, is from MP (2024a). The causal structure is further analyzed in Paldam (2024b and d).

Publications:

- MP, EG., 2008. Two Views on Institutions and Development: The Grand Transition vs the Primacy of Institutions. *Kyklos* 61, 65-100. 2008
- MP, 2021. *The Grand Pattern of Development and the Transition of Institutions*. Cambridge UP, New York
- MP, 2024a. The long-run path of the democratic transition. The inevitable collapse of three pillars model. To appear in *Kyklos*
- MP, 2024b. The transition of education. A cross-country macro analysis. *European Journal of Political Economy* 84, 102362 with net appendix
- MP, 2024c. Income, Growth, and Democracy. Looking for the main causal directions in the nexus. *European Journal of Political Economy* 83, 102532 with net-appendix

Working papers:

- MP, 2024d. Do relatively democratic countries grow faster? With net-appendix
- MP, 2024e. Can democracy and religiosity explain corruption? An empirical survey of cross-country data

The papers are posted at: <http://www.martin.paldam.dk/GT-Main2.php> in the last version, i.e., in the pre-print version together with the net appendices. The papers that led to the book are on <http://www.martin.paldam.dk/GT-Main1.php>, that also refers to a dozen net appendices.