June 14th - 2025

Net Appendix to:

Paldam, M., Saadaoui, J., 2025. The economic system of oil countries. Political capitalism?

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This appendix belongs to a project on the transition of institutions; see references. It has two parts for two data samples. The Main sample of more than 10,000 observations and the OMA samples of about 1,500 observations for the group of OPEC/MENA/Arab countries. The OMA sample has three samples and three sub-samples. The data for the Main sample contains set of robust transitions for the various democracy indices, in the growth rate, human capital, corruption, etc. See references (1) to (3) on the list above. The transitions are robust to the period length (annual, 5-years, etc.), to the sample period, and to the country groups.

However, the OMA countries are different and therefore analyzed in the references (4) and (5) on the list. This appendix is mainly to paper (5) but it also refers to (4) that has a long net Appendix. The main point referred to is the two theories explaining the OMA exception:

(T1) The ***oil theory***. High income from resource rents gives a different development path. The large inflow in the Kings treasury makes him very powerful, so that the country becomes more authoritarian.
(T2) The ***institutional genes*** theory. The MENA-countries has a strong complex of culture, institutions, incl legal system and social values that has been glued together by Islam for 1300 years.

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Here (T2) is strongest in the Arab countries listed in Table 2 as they are the core-countries of Islam. Thus, this appendix studies the Arab countries in Part 1. The 16 Arab countries are divided in 7 N-Arab and 9 O-Arab countries that are with no oil and with oil.

Table 1. Variables discussed

GDP, gdp	Gross National Product/National income, in real PPP prices, per capita. Source: Maddison project
y	Income, the natural logarithm to gdp same source
EF	Fraser Institute index of economic freedom. Range]0, 10[, thus ***rising*** for more freedom. Source: https://efotw.org/?geozone=world&page=map&year=2022
EFA#	The index has 5 areas, # = 1 to 5 analyzed in section 1.3
SC	Index of state capture in percent. Range]0,100[, thus SC ***falls*** when capture does. Source: https://governanceactionhub.org/explorations/local-global-coordination-for-impact/state-capture-index/
T	10 – TI, Transparency International index of honesty/corruption. Range]0, 10[, thus T ***falls*** when corruption does. Source: https://www.transparency.org/en/cpi/2024

References:

(1) MP., 2021. *The Grand Pattern of Development and the Transition of Institutions*. Cambridge UP, New York

(2) MP., 2024. Income, Growth, and Democracy. Looking for the main causal directions in the nexus. *European Journal of Political Economy* 83, 102532

(3) MP., 2025a. The long-run path of the democratic transition. *Kyklos* online first

(4) MP., 2025b. The OPEC/MENA/Arab nexus and the missing democratic transition. Pt. WP on http://www.martin.pal-dam.dk/GT-Main2.php, with Net-Appendix

(5) MP., Saadaoui, J., 2025. The economic system of oil countries. Political capitalism? For Miklós, R., Vahabi, M., Handbook of Political capitalism

Part 1 An analysis of the 16 Arab countries in the MENA region

The Arab league has 22 countries,[2] but the MENA countries in the Table 2 are taken to be the core group that are most comparable. The note is an addendum to Paldam and Saadaoui (2024), which shows how the economic system of oil countries differs from two groups of other countries, 25 Western countries and 123 other countries.

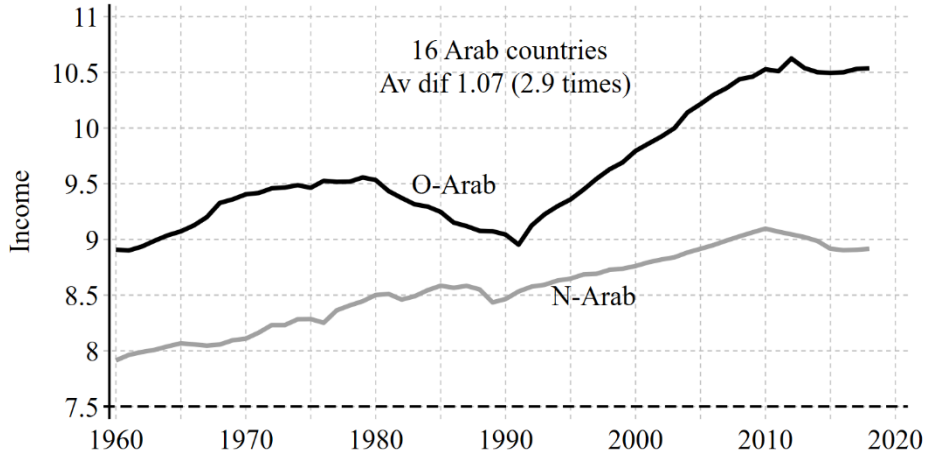
Figures 3 to 5 and 7 are made with kernel regressions om unified data, as explained in MP (2021). It is a method that is eminently suited to reveal transition curves (that are a function of income). It shows the long-run average path of a variable as a function of income

Table 2. The 16 Arab countries in the MENA region

N-Arab 7 Arab countries	O-Arab 9 Arab oil countries
1 Egypt	1 Algeria
2 Jordan	2 Bahrain
3 Lebanon	3 Iraq
4 Morocco	4 Kuwait
5 Syria	5 Libya
6 Tunisia	6 Oman
7 Yemen	7 Qatar
	8 Saudi Arabia
	9 UAE

O-Arab are OPEC members + Bahrain and Oman that are associated with OPEC.

Figure 1. Income measured as the logarithm to real gpd per capita

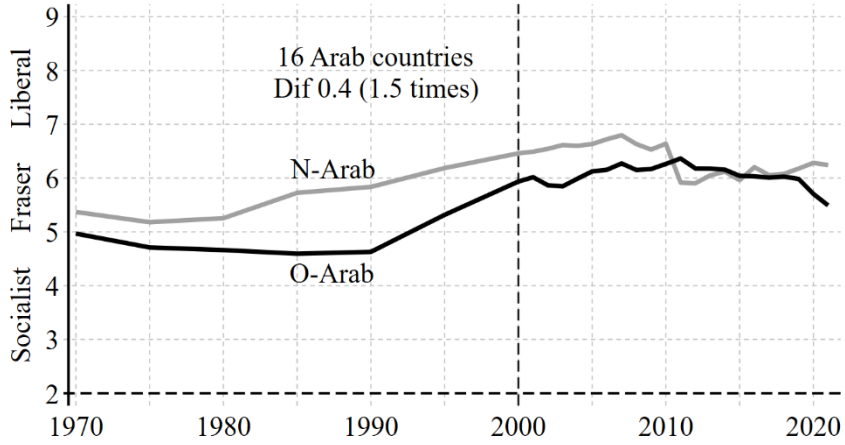


[2] The Comoros, Djibouti, Mauritania, Somalia, and Sudan are excluded, as borderline Arab only. Palestine is excluded as it has sporadic data only, and it is only partly independent (yet?).

1.1. Income and Fraser index over time

Figure 1 shows the average income of the N- and O-Arab countries. The figure shows that the two country groups have a difference in income level of 1.07 in ln-points that amounts to 2.9 times in *gdp*. The O-Arab countries are almost 3 times richer than the N-Arab countries. Figure 2 is the same graph for the Fraser Economic Freedom index. Here the difference is smaller, and the N-Arab countries are the most liberal, i.e., closest the market capitalism, though not much closer.

Figure 2. The aggregate Fraser index



1.2. Three indices: EF, economic freedom, SC state capture, and T corruption

Pages 6 to 8 contain three graphs, each analyzing the development in one index giving an aspect of the economic system. Tables 3 to 5 summarize the three pages.

Table 3. The three figures (1). The transition in Main and OPEC samples

Figure	Index	Sample	Form of kernel curve
3.1	EF	Main	An almost linear rising transition curve with a slope of $dEF/dy \approx 0.6$
		OPEC	Almost parallel one EF point lower
4.1	SC	Main	A perfect falling transition curve: Flat at SC ≈ 65 at y = 6 to 8. Then a fall that levels out at SC ≈ 7
		OPEC	Higher and falling less, so divergence resulting in a gap of 40 points
5.1	T	Main	A fine transition curve looking very much like the one for SC
		OPEC	Almost as the one for the SC

4. The three figures (2). The position of the O-Arab sample in OPEC transition from (1)

Figure	Index	Sample	Form of kernel curve
3.2	EF	Arab	Gray points. Significantly higher than others
4.2	SC	Arab	Gray points. Insignificantly lower than others
5.2	TI	Arab	Gray points. Significantly lower than others

Table 5. The three figures (3): comparing the N and O-Arab samples

Figure	Index	Sample	Form of kernel curve
3.2	EF	N-Arab	Gray points. Significantly higher than O-Arab
4.2	SC	N.-Arab	Gray points. Borderline significantly lower than O-Arab
5.2	T	N-Arab	Gray points. Significantly lower than O-Arab

This all show that both OPEC and Arab countries lags behind in development. And both theory (T1) and (T2) are needed to understand why. The data for the SC index has a perfect transition curve, that should have made the SC-level 40 points lower see Figure 4.1. However, it is only 5 points lower. So, the oil wealth has prevented all of the normal fall in the SC-index.

Table 6. State capture 1996-2022 from Kaufmann 2024

	O-Arab	N-Arab
Average	63.6	68.4
Standard deviation	11.8	17.8
Countries n_c	9	7
Standard error (n_c)	3.9	6.7
Observations n_o	81	63
Standard error (n_o)	1.3	2.2

The index is reported for every third year so there are 9 times more observations than countries.

Table 7. The level of honesty/corruption, 1995-2023

	O-Arab	N-Arab
Average	4.70	6.61
Standard deviation	1.10	1.67
Countries n_c	9	7
Standard error (n_c)	0.4	0.6
Observations n_o	126	248
Standard error (n_o)	0.09	0.04

The index uses the interval [0, 10] from extreme corruption to extreme honesty.

The fall in the corruption level due to oil is also smaller than it normally should, but it is only half of the normal. Figure 3.1 below shows that economic freedom increases with income: The increase is almost linear and about 0.6 Fraser point for one income point (i.e., 2.7 times). The OPEC curve is also almost linear, but a little lower. This may be due to institutional inertia, as the start of an oil wealth is a jump in income that institutions have to catch up with.

Figure 3. EF index. Kernel regressions for transition, with *bw* = 0.5

Figure 3.1. All but OPEC.
For OPEC see 3.2

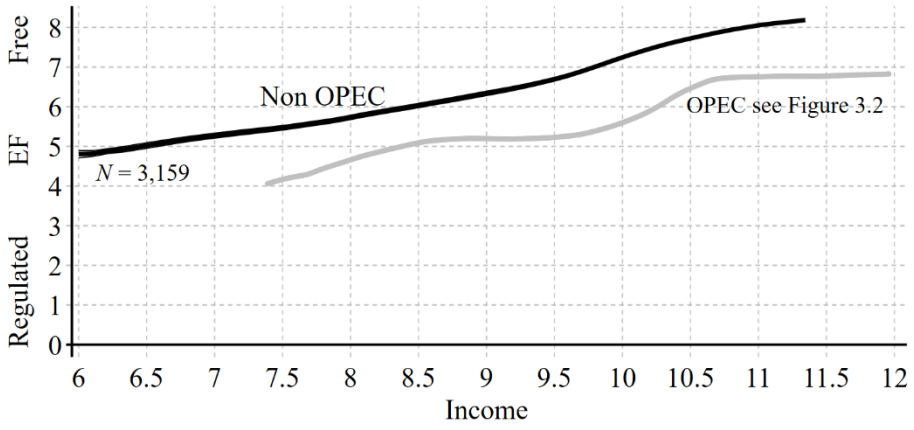


Figure 3.2. OPEC countries
Arab and Others

Figure 3.3. Arab countries
N- and O-group

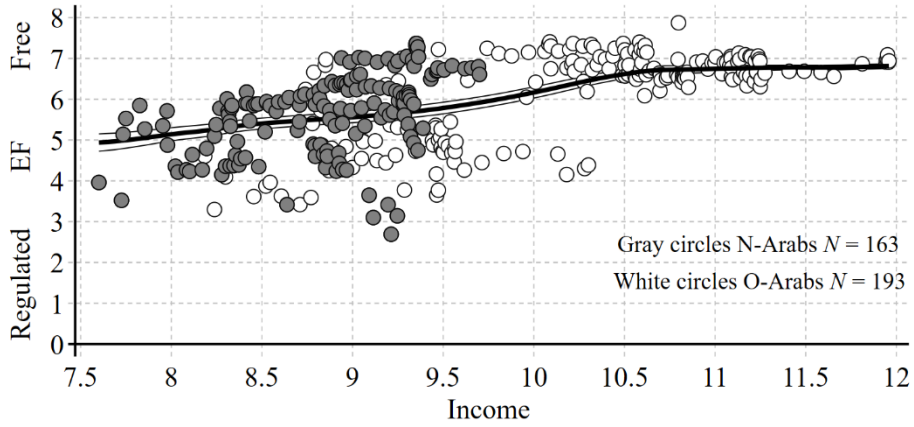


Table 8 to Figure 3. Regressions to reveal shifts

	Analyzing the 387 observations on Figure 3.2 for OPEC countries			
	Constant	Income	Arab dummy	R^2 adj
(1)	-1.58 -3.5)	0.75 (16)		0.39
(2)	-0.81 (.1.5)	0.65 (11)	0.29 (2.4)	0.40
	Analyzing the 356 observations of Figure 3.3 for Arab countries			
	Constant	Income	N-Arab dummy	R^2 adj
(3)	-0.67 (-0.2)	0.62 (13)		0.34
(4)	-2.94 (4.8)	0.89 (14)	0.77 (6.4)	0.41

The two dummies are 1 for the gray points and zero for the white points on the two figures. The p-value for the two dummies are significantly positive, especially in regression (4).

Figure 4. SC index. Kernel regressions for transition, with *bw* = 0.5

Figure 4.1. All but OPEC.

For OPEC see 4.2

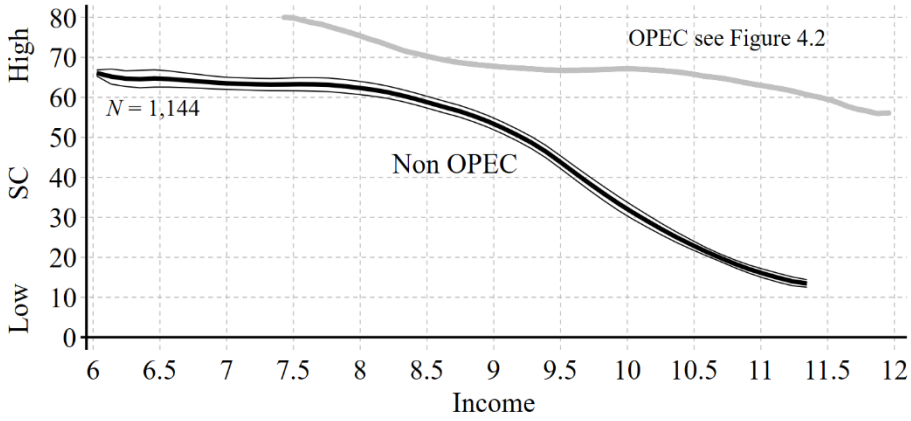


Figure 4.2. OPEC countries Arab and Others

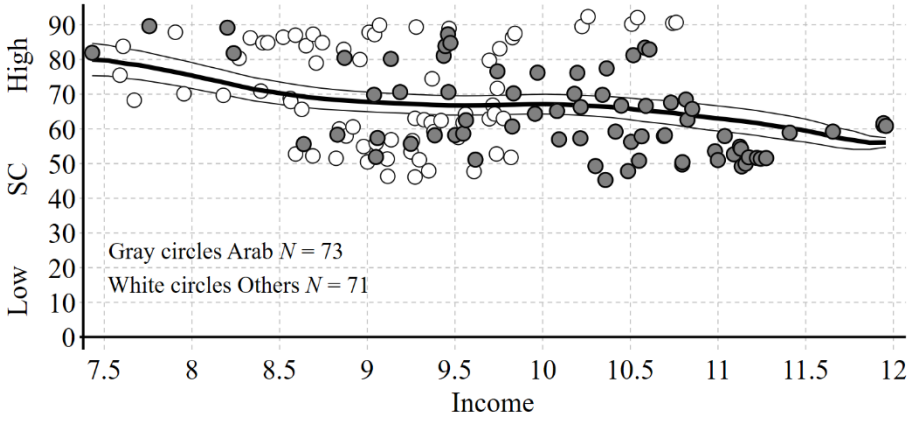


Figure 4.3. Arab countries N- and O-group

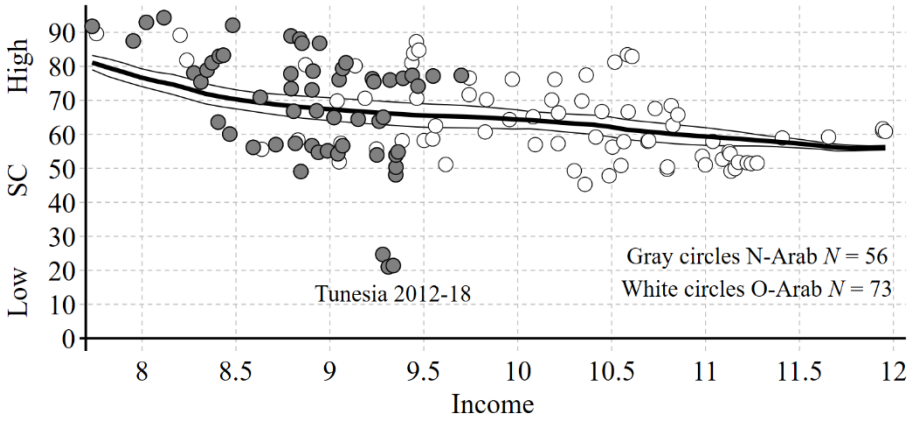


Table 9 to Figure 4. Regressions to reveal shifts

	Analyzing the 144 observations on Figure 4.2 for OPEC countries			
	Constant	Income	Arab dummy	R^2 adj
(1)	111 (10)	-4.55 (4.2)		0.10
(2)	105 (9)	-3.82 (3.0)	-2.71 (1.1)	0.10
	Analyzing the 129 observations of Figure 4.3 for Arab countries			
	Constant	Income	N-Arab dummy	R^2 adj
(3)	125 (11)	-6.17 (5.3)		0.17
(4)	145 (9)	-8.01 (5.2)	-5.55 (1.8)	0.19

The two dummies are 1 for the gray points and zero for the white points on the two figures. The p-value for the N-Arab dummy in regression (4) is 7%, so it is close to significance.

Figure 5. T index. Kernel regressions for transition, with *bw* = 0.5

Figure 5.1. All but OPEC.

For OPEC see 5.2

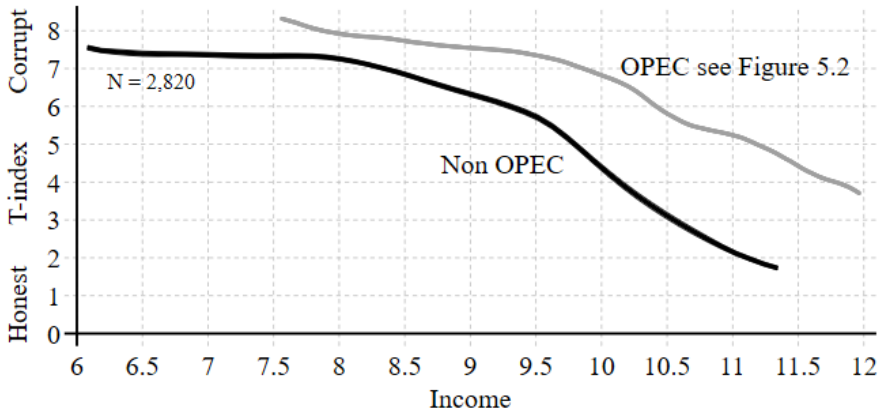


Figure 5.2. OPEC countries

Arab and Others

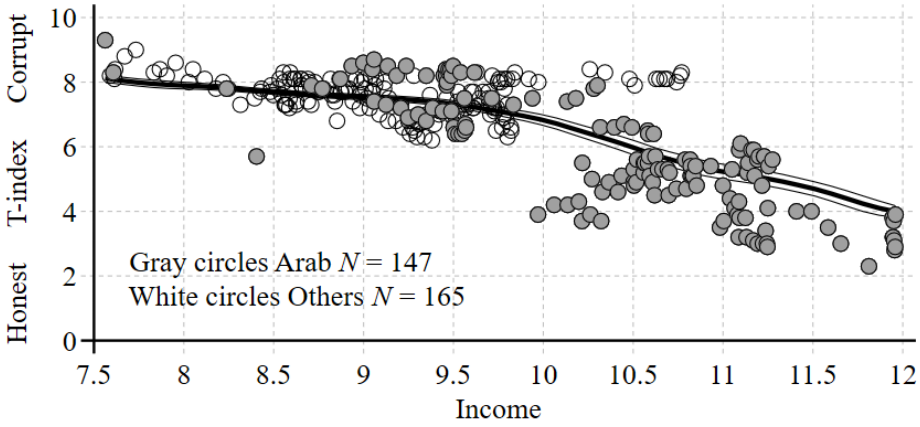


Figure 5.3. Arab countries

N- and O-group

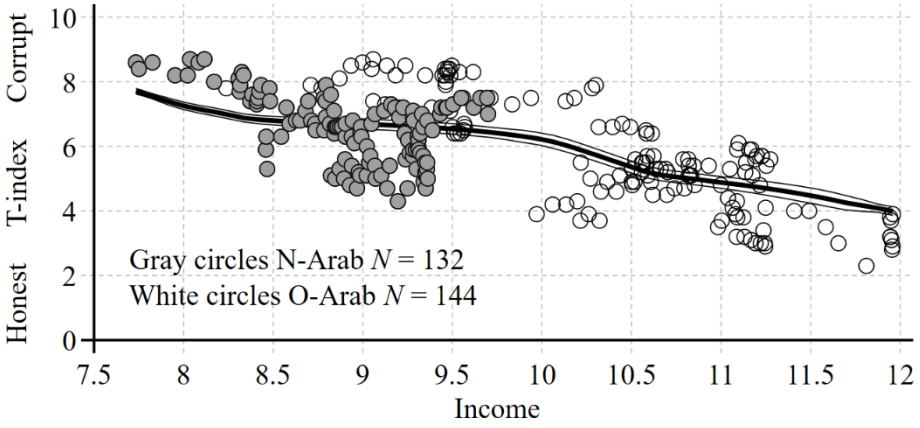


Table 10 to Figure 5. Regressions to reveal shifts

	Analyzing the 312 observations on Figure 5.2 for OPEC countries			
	Constant	Income	Arab dummy	R^2 adj
(1)	8.53 (16)	-1.22 (22)		0.61
(2)	7.99 (11)	-1.03 (15)	0.62 (4.6)	0.63
	Analyzing the 276 observations of Figure 5.3 for Arab countries			
	Constant	Income	N-Arab dummy	R^2 adj
(3)	6.20 (-10)	-1.04 (16)		0.49
(4)	12.29 (14)	-1.59 (19)	1.59 (19)	0.61

The two dummies are 1 for the gray points and zero for the white points on the two figures. The p-value for the two dummies are significantly positive, especially in regression (4).

1.3. The five areas of the Fraser index

Figure 6. The development of EFA1-EFA5 over time for the two groups of Arab countries

Figure 6.1, EFA1. Government size Public expenditure and taxes, including marginal taxes

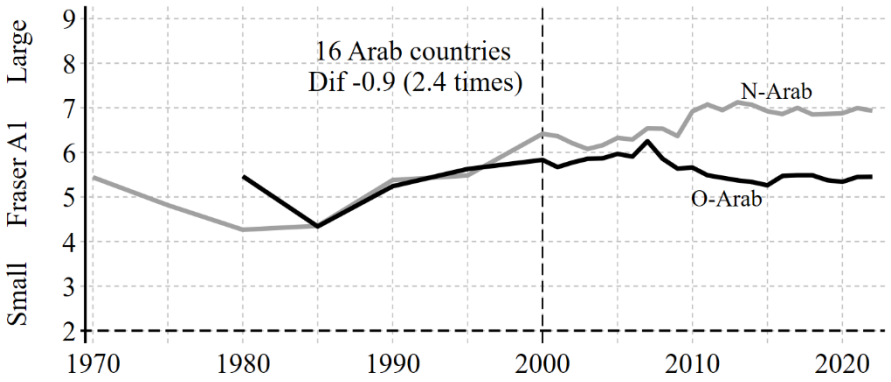


Figure 6.2, EFA2. Legal quality and property rights protection

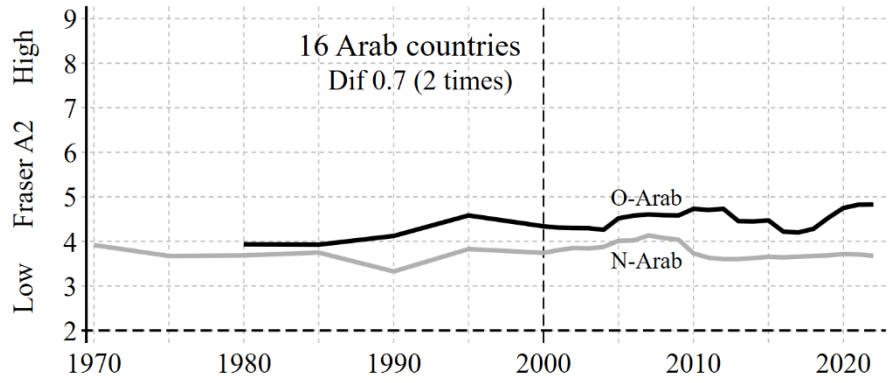


Figure 6.3, EFA3. Sound money Money growth, inflation, and its standard deviation

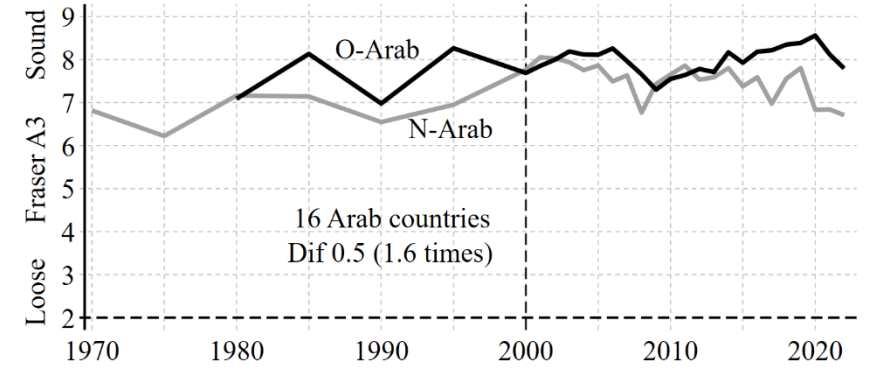


Figure 6.4, EFA4. Free to trade Trade taxes, and trade restrictions, black market exchange rates

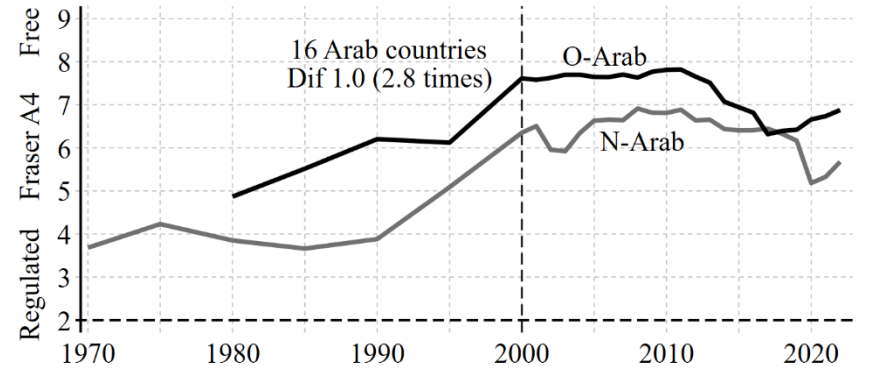
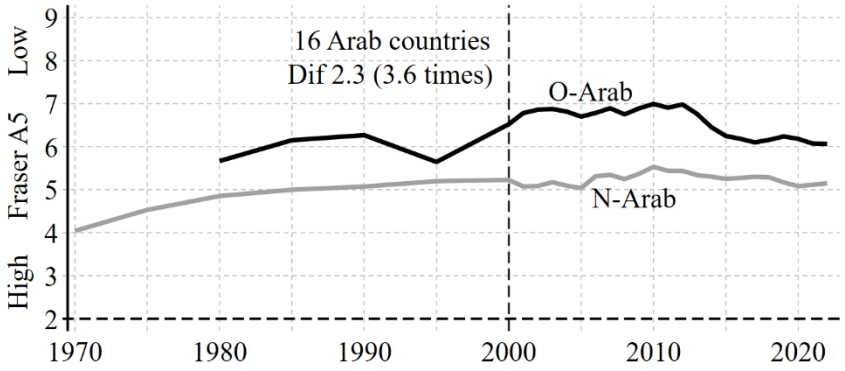


Figure 6.5, EFA5. Regulation of business In three main fields: credit, labor, and business in general



As usual the FA1 area is different, as N-Arab is larger, but all the other four areas have a bit more economic freedom in the O-arb than in the N-Arab group.

Part 2. The transitions of the Areas of the EF-index

2.1 The transitions in the 5 Areas of the FE-index for the Main and OPEC samples

Figure 7 shows the income dependency of the five EFAs by kernel regressions as a function of income. The black curves are for the OPEC sample where $N = 239$, which is rather modest, especially as it merges the 6AP and the 10oO samples (recall that both Libya and Equatorial Guinea are missing). The OPEC curves are surrounded by 95% confidence intervals. Most of the curves show the two levels of the wealthy 6AP group and the lower level of the oO-group.

Figure 7. The path of the areas of the EF index for OPEC and Others. Kernel regressions.

Figure 7.1. EFA1, government size

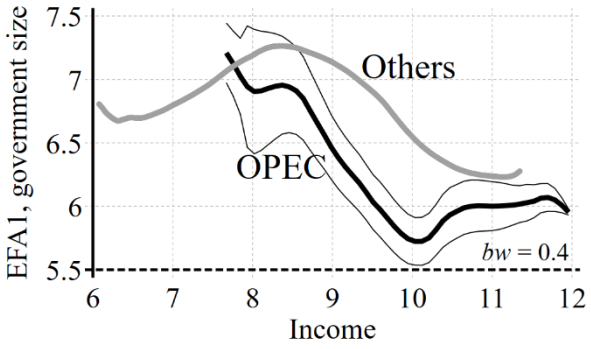


Figure 7.2. EFA2, legal quality

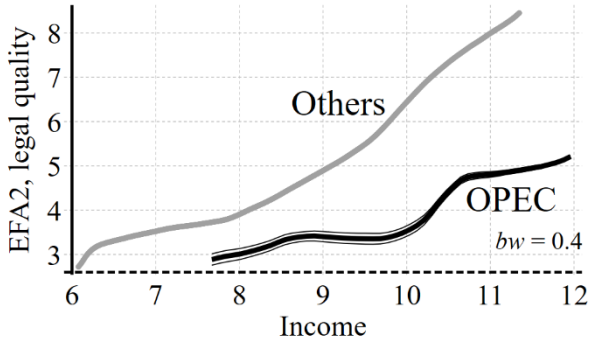


Figure 7.3. EFA3, sound money

Figure 7.4. EFA4, free trade

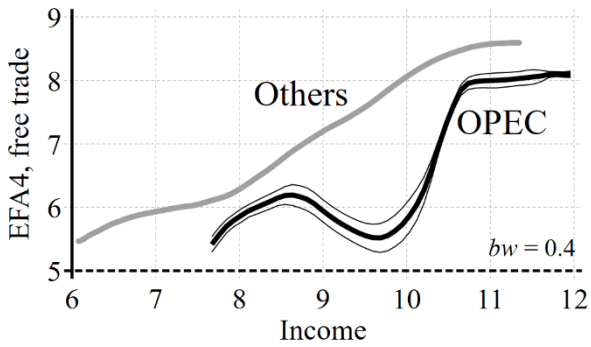
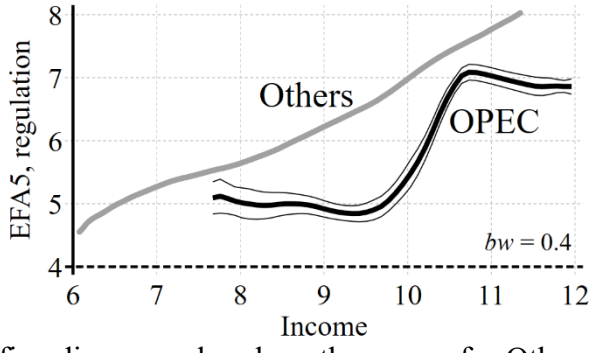


Figure 7.5. EFA5, regulation



For comparison, the five diagrams also show the curves for Others, where $N = 2{,}389$. Here the

95% confidence intervals are not shown, but they are much lower than for the OPEC curves. It appears that EF2 – EF5 have transition curves as expected. The data contains few observations for low-income countries, so the flat curve expected for traditional societies is unclear. As expected, the curve for EFA1 deviates, and shows a strange hump shape. The key observation from Figure 7 is that the OPEC curves are always significantly lower than the curve for Others. EFA2, legal quality, is not only lower but increasingly so.

Table 11. The aggregate Fraser index per decade for the 18 OPEC countries

Year	1970-79	1980-89	1990-99	2000-10	2010-21
6AP countries at the Arabian Peninsula					
Bahrain	5.60	6.66	6.59	7.18	7.24
Kuwait	5.92	5.26	6.17	6.97	6.63
Oman	5.05	5.92	6.61	6.85	6.66
Qatar	Na	Na	Na	Na	6.98
Saudi Arabia	Na	Na	Na	Na	6.40
UAE	6.48	6.51	7.21	7.03	7.22
11oO other OPEC countries					
Algeria	3.84	3.12	3.49	4.98	4.85
Angola	na	na	Na	4.34	5.08
Congo Br	3.54	2.84	2.80	4.43	5.28
Ecuador	5.11	5.43	6.11	6.08	6.30
Equt. Guinea	No observations				
Gabon	3.96	4.74	5.35	5.23	5.21
Indonesia	4.45	5.18	5.95	6.33	7.00
Iran	5.95	4.14	4.34	5.64	5.05
Iraq	Na	Na	Na	Na	4.73
Libya	Na	Na	Na	Na	4.14
Nigeria	3.29	3.60	3.38	5.49	6.45
Venezuela	6.90	6.31	5.13	4.55	3.01
Averages					
Av 1	5.01	4.97	5.26	5.90	5.91
Av 2	5.01	4.97	5.26	5.78	5.78

Av 1 is for the 12 countries with data for all periods. Av 2 is for all available.

Table 11 shows that the Fraser index is very similar for the available observations from the Arab Peninsular. However, the EF-index of the 11oO countries differs a great deal. Notably Venezuela that has the reverse path of other countries.

The spatial pattern has been examined as a clustering of cross-country correlations. It is not as strong as expected, but this is a long story.