The OPEC/MENA/Arab nexus and
the missing democratic transition

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Abstract:

The democratic transition is a strong relation in the data. However, there is an exception: The 26 countries in the OPEC/MENA/Arab nexus have no democratic transition. While the facts are clear, the explanation is controversial and complex as it requires (at least) two intertwined theories: The *oil theory* and the *Muslim culture theory*. More than half of two country groups overlap, and in addition all but two of the MENA countries are Arab, with similar language, religion, history, and culture, giving spatial effects. Thus, it is difficult to untangle the effects, but it is still demonstrated that both theories matter, so that the Muslim oil countries are especially far from democracy.

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        The paper refers to the auhors work on transitions including the democratic transition in Paldam (2021), which is further developed in Paldam (2023) on the three pillars model explaining the underlying transition curve, and Paldam (2024) studying the main causal directions in the growth, income democracy nexus.

1. Introduction: The fact in need of an explanation

In a handful of papers, the author has studied the remarkable robustness of the democratic transition. It is a strong underlying process in the data, though it is overlaid with a lot of fuzziness. Poor countries in the traditional steady state are autocracies. When they grow into the wealthy modern steady state, they become democracies as shown by Figure 1. The average path as a function of income looks the same both in cross-country data and long time-series.

This paper deals with the only large exception to the democratic transition. While other countries become democracies when income grows as shown, the ***OMA nexus*** of the OPEC-MENA-Arab countries has no transition, as also shown on Figure 1. The figure looks at two democracy indices, P, polity and, V, polyarchy. The gap between the two sets of curves measured in % of the range of the indices grows from 10% at low income ($y = 7$) to no less than 75% at high income ($y = 11$). Thus, the paper analyzes a large exception.

Section 2 presents two intertwined theories to explain the OMA-curves in Figure 1. The oil theory and the Muslim culture theory. The first theory addresses the OPEC countries, The second theory addresses the MENA and Arab group who are all Muslim. The paper demonstrates that both theories are necessary to understand the OMA exception.

Figure 1. Four kernel regressions. Explaining P and V by y, Main and OMA samples
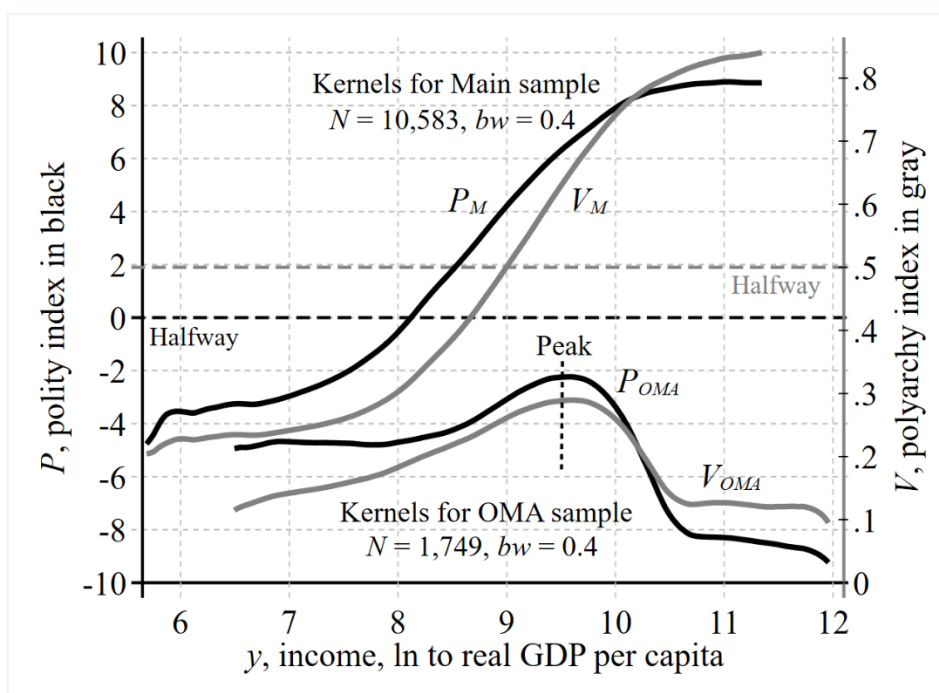
The two kernels for the Main sample have 95% confidence intervals of about 1%, except at the low end, where data are thin. The confidence intervals on the P_{OMA} and V_{OMA} kernels are much like the graphs in Figure 3.

Table 1. Three groups and three sub-groups for the 26 countries

	Countries			Figures
(1) Group	18	**OPEC**, present and former OPEC members		3
(2) Sub-group	8	**OPEC-only**, OPEC but not MENA		6 and 7
(3) Sub-group	10	**Overlap**, both OPEC and MENA		7
(4) Sub-group	8	**MENA-only,** MENA but not OPEC		6
(5) Group	18	**MENA**, Middle East and North Africa		4
(6) Group	16	**Arab**, the MENA countries except two		2 and 5

OPEC is the Organization of Petroleum Exporting Countries that started in 1960, MENA is the Middle East and North Africa. See Appendix for the countries of the groups. The non-Arab MENA-countries are Iran and Turkey.

Three variables are used: y, income, is the (natural) logarithm to real GDP per capita in PPP prices, and two democracy indices: P, polity, and V, polyarchy that has different scale, so that P is defined on [-10, 10], while V is on]0, 1[; see references. From 1800 to 2018 the variables have $N = 12,332$ triplets of observations. They are split into the OMA sample of $N = 1,749$ for 26 countries, and the Main sample of $N = 10,583$ for 170 countries.

Figure 1 shows four kernel regressions: $P_M(y)$, $V_M(y)$, explain the Main sample with perfect transition curves. $P_{OMA}(y)$, and $V_{OMA}(y)$ explain the OMA sample with curves that differ in three ways: They are fully in the lower, authoritarian, half of the picture, they have a characteristic hump-shape, with a peak at $y = 9.5$, and weak trends.

Table 1 shows that both OPEC and MENA consist of 18 countries, of which 10 overlap. Furthermore, 16 of the MENA countries and nine of the OPEC countries are Arab. The 16 Arab countries have much in common as regards language, religion, history, and culture, and though they sometimes quarrel, they also cooperate in many ways. Thus, there must be ***spatial effects*** within the Arab group. The overlap and spatial effect make it difficult to sort out the effect of OPEC and MENA. The three sub-groups surveyed in Table are meant to separate the effects. The OPEC-only sub-group should be explained by the oil theory only, while the MENA-only sub-group should be explained by the Muslim culture theory only. The Overlap sub-group should contain the effect of both theories, and thus be the most extreme group.

Section 3 uses standard linear regression tools, with a set of binary dummies to sort out the effects of the three groups and the three sub-groups. Section 4 accounts for the non-linearities by estimating kernel regression for the groups and the sub-groups. Most have hump-shaped curves that look like the OMA-curves, but the MENA-only sub-group misses the hump. Section 5 concludes.

2.   Two theories and some notes on the literature

This section first looks at the two indices and then the two theories are discussed. The 26 countries of the OMA-nexus were all LDCs (less developed countries) when oil was found. Some of the oil countries have become rich, but they still have many social structures that are close to the LDC pattern.

2.1   The two indices

Figures 2a and b show the distribution of the 10,383 annual observations for the Main sample that are used to estimate the two kernel curves $P_M(y)$ and $V_M(y)$ in Figure 1. They illustrate the difference between the two indices.

Figure 2. The frequency distribution in % of the Main and Arab samples

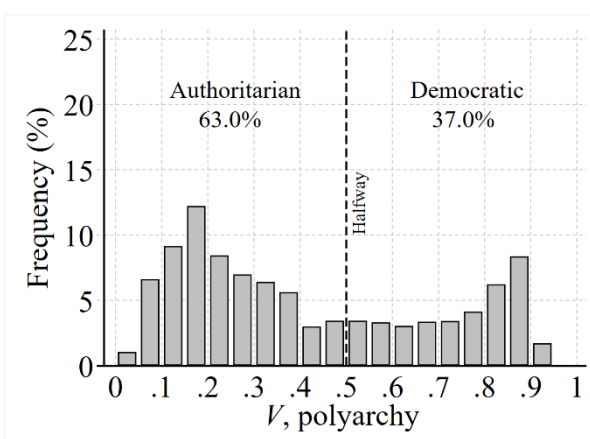Figure 2a. Polity Main sample
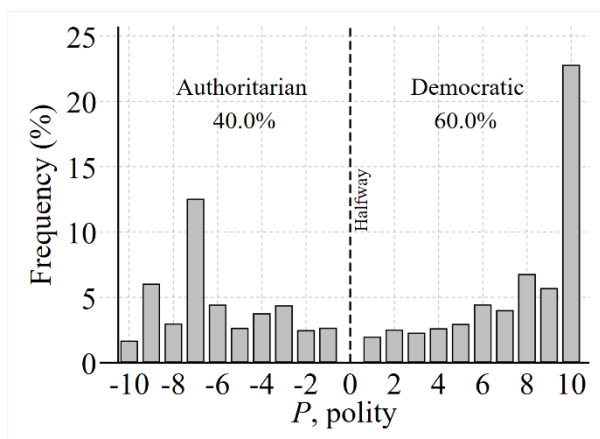
Figure 2b. Polyarchy Main sample

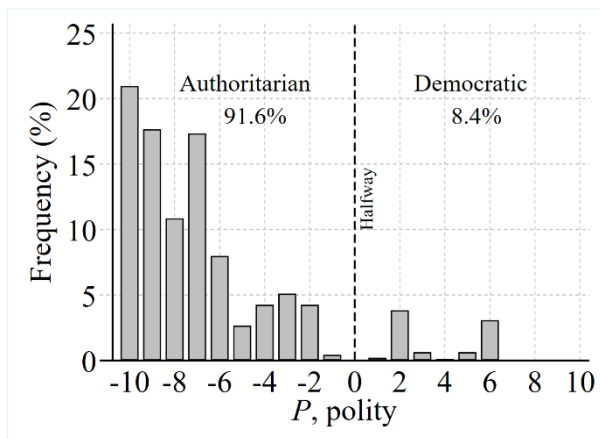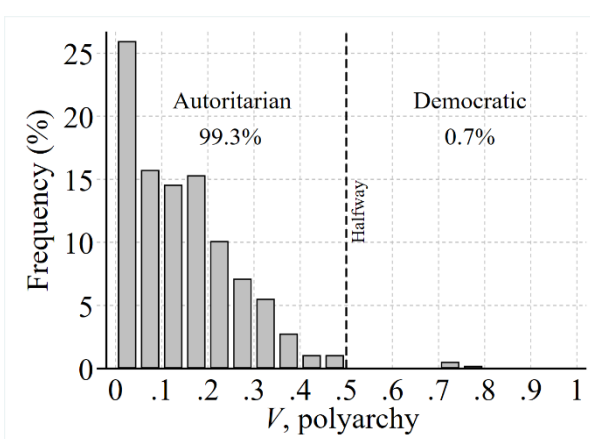Figure 2c. Polity Arab, see Figure 4a

Figure 2d. Polyachy Arab, see Figure 2b

The bins on the polity graph are one polity point, while it is 0.05 on the polyarchy graph. The main sample has N = 10,383 observations, while the Arab sample has N = 940.

The polity scores many countries as a perfect democracy, but polyarchy scores no country as a perfect democracy – the top bin from 0.95 to 1 is empty. In addition, polyarchy is very reluctant to consider an LDC to be a democracy, so it has only 37% of the observations in the upper half of the scale. This difference between the indices will appear throughout. The two steady states at the low- and high-income ends give both distributions two peaks.

Figures 2 c and d gives the distribution of the 940 observations for the Arab group that is the least democratic of the three groups. Thus, the Arab sample has a skewness to the left giving a much lower level of democracy than has other countries. The average values for income $y_{Main} = 8.410$ and $y_{Arab} = 9.017$ so that if the Arab countries followed the democratic transition the skewness should go the other way.

2.2 The oil theory: Economic mechanisms

In the short run oil only increases income, but gradually this causes changes in society. It may require half a century to reach the full effect. Think of human capital; even if the government of the oil country wants to expand human capital to fit to the new high-income level it will take a handful of decades.

Some papers see the OPEC exception as the political part of the Dutch disease/resource curse theory,[2] e.g., Haber and Menaldo (2011) and Aslaksen (2011). This theory adds to the explanation, but it misses a key point:

The path for the OPEC group can be explained by a version of the three pillars theory. Transition theory starts at the traditional political system. It was the ***three pillars system***, where the pillars are the king, the feudal aristocracy/local chiefs, and the Church.[3] The transition is explained by the agricultural transition, where feudalism vanishes, and the religious transition that weakens the Church. Instead of the old, concentrated power, a large middle class emerges. It absorbs most of the large increase in human capital, and it wants mass representation.

Oil prospection and production are capital-intensive high-tech operations. A new oil sector in an LDC must rely on international technology and expatriate technicians. Oil installations are expensive and highly explosive, so they are heavily fenced. Once it produces, it needs few workers. Thus, the oil sector becomes an *enclave* with few direct links to the rest of society.

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[2] The literature on *Dutch Disease* goes back to Corden (1984). His analysis had Australia in mind, where the resource sector is integrated in a modern economy. The term *resource curse* was the second coming of the Dutch Disease theory. It was introduced by Sachs and Warner (1995) and analyzed in a large literature surveyed in Ploeg (2011). While the economics of the theory is well worked out, the political part is covered by fewer papers.

[3] The old three pillars theory is discussed in Paldam (2023). The term Church (with capital C) indicates the institution of a religion.

The large effect is indirect. Oil produces resource rent that is easy to tax, so the king's treasury becomes awash with funds. Consequently, the economic power of the king rises.[4] In the three pillars model, the royal pillar strengthens so much that the joint power of the three pillars increases. Hence, the transition comes to work in the reverse. Instead of changing society, oil wealth allows society to be preserved.

Figure 1 already showed the $X(y)$ curves for the OMA-nexus, and Figure 3 below shows that the OPEC-kernel looks precisely as that with a marked peak and a downturn. The oil theory explains the peak as the point where the king becomes so rich as to control the country, and hence the country becomes more authoritarian. The average income of the non-OPEC Arab countries from 2000-2018 is about $ 8,500. The peak is 60% higher, and thus well ahead of where the countries would have been without oil.

In addition, there is the Dutch disease effect already mentioned: The big inflow of foreign exchange causes the exchange rate to fall (revaluate), and hence the non-oil sectors lose international competitiveness. This reduces employment, but the king can afford to subsidize his supporters. Thus, they become plentiful, and in some cases much of the population comes to rely on subsidies.

2.3   The Muslim culture theory: Socio-cultural factors

Figure 2 showed the distribution of the observations of the Arab and the Main sample. The Arab sample is much more authoritarian – also in the countries without oil. Islam is deeply embedded in the culture of the MENA countries.[5] This suggests a negative effect on democracy of Muslim culture.[6] The suggestion typically refers to two observations about the culture and history of the Arab/Muslim world:

(1) Many Muslims see the regime in Mecca at the time of the prophet Muhammed (ca 570-632) as an ideal. It was an oligarchy dominated by the largest trading families, though it is difficult to use modern terminology for such distant times. In addition to being considered the chosen spokesman of Allah, Muhammed was a big worldly success. He became successful in business, as a general, and as the leader of his town. He started the military expansion that led to the big Arab-Muslim empire within a century of his death.[7] Consequently, he is greatly

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[4] When oil is found in countries with democratic control of the treasury, the resource rents support democracy.
[5] The countries of the MENA/Arab group are all Muslim though pockets of other religions survive in most of the countries, notably in Lebanon. These pockets are dwindling.
[6] This observation has led to a huge discussion: 'Islam and democracy' give 41 million hits in Google. The discussion was fueled by Huntington (1992) and Lewis (2002).
[7] This contrasts to Jesus, who was a poor itinerant preacher, who never had worldly success. He was even executed. For the first 350 years Christianity was a religion of the poor and downtrodden.

admired. He was not a democratic ruler, and after his death his close associates started the tradition of khalifs in Islam.

(2) The sacred Quran does not recommend democracy,[8] at least not as we interpret the term today, though, once again, it is difficult to interpret words spoken so far ago. Today many radical Muslims reject democracy as part of the 'decadence' of the West.

Islam came from the Arab peninsular, and the prophet preached in Arabic as spoken by the elite at that time. With some work it is accessible to the modern Arab, and Muslims are urged to read it in the original. The other important source to tradition is the Hadith, which is a collection of stories describing the life of the prophet and his close associates. Together these sources make the Arab people and their language central to Islam. The data analyzed below demonstrate that the Arab group is more Muslim than MENA in general.

The Muslim culture theory does not explain the hump-shape, but only a general low level of democracy. The peak on the OMA-curve is only explained by the oil theory.

2.4   The large literature

To discuss the MENA, and notably the Arab, exception, poses the emotional question: Is Islam the explanation? As sketched above, the Muslim culture theory is not a theory with simple economic mechanisms. It hinges on traditions and cultural factors that may or may not have a basis in the Muslim theology, and thus, in the last resort, in the Quran.

The gulf separating the political systems of the West and the Muslim world is a problem giving political tensions/conflicts, even terrorism, and thus there is a wish to talk the gulf down. Hence, the question asked may be reformulated. Instead of asking why Muslim countries are authoritarian, it asks if Islam and democracy are incompatible.[9] To prove that Islam and democracy are compatible only needs a few examples of democracy in a Muslim country, and such cases does exist.

There is also micro evidence from polls where Muslims answers as nicely as other people to items about their preference for democracy; see e.g., the early survey by Inglehart (2002) and Hofmann (2004). Here the argument easily reaches the chicken and egg circularity. It may be certain cultural traditions – such as the strong protection/control of women – that cause Arab countries to be so authoritarian. Then it becomes necessary to explain where these

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[8] Muslims see the Quran as the words of Allah spoken by his prophet and immediately written down. Most Christians agree that the new testaments of the Bible are four narratives of the life and words of Jesus written half a century (or more) after his death. Thus, the text of the Quran is more sacred to the believers.

[9] Borooah and Paldam (2007) and Potrafke (2012) provides evidence. Bayat (2007) states the reformulation. Muslim democracies are found in Malaysia, Indonesia, and Turkey. See also Boroumand and Boroumand (2002).

cultural traditions came from. I believe that most Muslims will say that they came from Islam, i.e., from the sacred Quran and tradition, as described in the Hadith. However, Islam appeared in an area that already had a strong culture that had much in common with traditional Islam. However, there is also the story of the Arab Spring 2010-12 – why it came and why it failed; see Inglehart (2017) and Ferrero (2018).

2.5   Two theories: one story and country differences

The two theories both predict the low level of the kernel curves for the countries in the OMA-nexus, as already shown. To sort out the effects of the two theories and the importance of the three parts of the nexus two methods are used. One is to run regressions with binary dummies for the groups and sub-groups. This is done in section 3.2. It shows the different *PV*-levels in the groups. The second method is to estimate separate kernel curves for the effect of income for the groups. This gives an alternative measure of the *PV*-levels in the groups and in addition shows the nonlinearity of the relations. The theories give three predictions about the kernel-curves for the sub-groups:

(i) The ***MENA-only*** group of eight countries are Muslim but have no oil. Hence, they should have no peak and a relatively high *PV*-level. That is, a level between the main and the OMO-level.

(ii) The ***OPEC-only*** group of eight countries have oil but are outside the MENA area – most are not Muslim. They are so far from the MENA/Arab countries that spatial effects are unlikely. Hence, they should have a strong hump and a relatively high *PV*-level.

(iii) The ***Overlap*** group of ten countries are both MENA and OPEC and contain only one non-Arab member (Iran). Thus, it shows the effect of both theories working together, so (iii) the Overlap curve should have a hump and a particularly low *PV*-level.

Section 4.2 demonstrates that the three predictions are true. The perspective of the paper is comparative-macro, which country differences, but the sub-groups consist of only 8, 10 and 8 countries. Complex stories can be told about each country. There are surely big differences between, e.g., Saudi Arabia that treasures traditional/orthodox Islam and is the guardian of its most holy places, and Turkey that has an old history of secularization.[10] Other MENA countries, such as Algeria, Libya, Egypt, Syria, and Iraq have had periods of Arab socialism partly inspired by the Turkish example. There have also been waves of radical Islam. Appendix

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[10] Turkey has a strong history of secularization since Mustafa Kemal Atatürk, who ruled Turkey 1923-38. He deeply influenced his successors until recently. The Kemalist policies have westernization and development as the main goals, the Arab alphabet and traditional dresses were abolished, gender equality was pushed, etc.

A2 analyzes the robustness of the aggregation in the three sub-groups. For each sub-group, a **bundle** of kernels is estimated, by deleting every country and recalculating the kernel. Each of the six bundles have some variation, but the average pattern is robust.

3. The results from linear tools

3.1 The correlation between income and the two democracy indices

Table 2 reports two correlations r(X, y) and ρ(X, y) for the groups discussed. As the curves in Figure 1 are non-linear, the normal Pearson correlation, r, is supplemented with, ρ, Spearman's rank correlation. Rows (i) and (ii) tell the same story as Figure 1. The (X, y)-relation differs strongly in the Main and the OMA samples.

Table 2. The number of observations and correlations to y in groups and sub-groups

	Group	Number of Countries	N	Polity r(P, y)	ρ(P, y)	Polyarchy r(V, y)	ρ(V, y)
(i)	Main	130	10,583	0.581	0.609	0.705	0.647
(ii)	OMA	26	1,749	-0.048	-0.126	0.103	0.088
(1)	OPEC group	18	1,224	-0.128	-0.253	0.039	-0.020
(2)	OPEC-only sub-group	8	642	0.386	0.321	0.535	0.492
(3)	Overlap sub-group	10	582	-0.128	-0.156	0.079	0.023
(4)	MENA-only sub-group	8	525	0.339	0.307	0.527	0.501
(5)	MENA group	18	1,107	-0.123	-0.196	0.002	-0.023
(6)	Arab group	16	940	-0.142	-0.229	-0.016	-0.054

The two coefficients of correlation are the standard (Person's) **r**, and Spearman's rank correlation **ρ**. The two correlations are close in samples of normally distributed data, but they differ as democracy indices are non-normal.

Table 3. Comparing a factor analysis for the OPEC and the MENA samples

	Main, N = 10,583		OPEC, N = 1,224		MENA, N = 1,107		Arab, N = 940	
	Factor1	Factor2	Factor1	Factor2	Factor1	Factor2	Factor1	Factor2
Eigenvalue	2.13	0.03	1.67	0.17	1.51	0.08	1.40	0.07
Variable	Factor loading		Factor loadings		Factor loadings		Factor loadings	
P, polity	0.87	-0.10	0.92	-0.11	0.87	-0.07	0.84	-0.05
V, polyarchy	0.93	-0.10	0.91	0.13	0.86	0.09	0.83	0.08
y, income	0.71	0.12	-0.05	0.37	-0.07	0.26	-0.10	0.24

Rows (1) to (6) show the pattern expected: The lowest correlations are in row (3) for Overlap, and row (6) for the Arab group. Both rows (2) for the OPEC-only and (3) for the MENA-only groups have positive correlations, but they are smaller than in the Main group. All the polyarchy correlations are larger than the polity correlations indicating that polyarchy

has a stronger upward trend than polity. This was already visible on Figure 1. And will appear in most figures below.

Table 3 is a factor analysis of the groups. The analysis shows one factor only. It is due to the high correlations of the two democracy indices. While income belongs to this factor in the main sample, it does not in any of the three OMA samples.

3.2 *OLS regressions with binary group dummies[11]*

Table 4 uses all data and reaches high t-ratios. Parts A and C are for the polity index, and Parts B and D are for the polyarchy index. The scale of the two democracy indices differs as mentioned, but the t-ratios and the aR^2's are similar.

Table 4a analyzes the effects of the groups. The pure effect of the OMA dummy is shown in regressions (2) and (7). As expected, it is large and negative. Once it is included the effect of income rises. Regressions (3) - (5) and (9) to (11) analyze if the three parts of the nexus contribution to the explanation of the OMA-variable. All three do, as seen from the aR^2 scores. They increase the effect of income, while the effect of the OMA variable is reduced. OPEC has almost the same kernel curve in Figure 3 below as the full OMA kernel on Figure 1. Thus, the change from regression (2) to (3) and from (8) to (9) only increases the fit marginally. But both MENA and especially Arab gives a larger contribution. Rows (6) and (12), include all three parts of the nexus. Here the coefficient on OMA even becomes positive, due to multicollinearity. OPEC gets the strongest coefficient, and the sum of the change in the coefficient to OMA equals the coefficient to OPEC, so OMA and OPEC have almost the same effect, but still MENA and especially Arab add something to reduce the effect of income.

Table 4b analyzes the effects of the sub-groups. The pattern for the OPEC-only and MENA-only is similar. When the OMA variable is not included the effect is negative, but when OMA is included the effect changes to be positive. This means that the two groups are between the Main group and the OMA-group. Thus, the *PV*-level is relatively high relative to the OMA-group. Conversely for the Overlap, it is very negative without the OMA-variable, but remains negative when the OMA-variable is included. Consequently, both oil and Muslim culture give more authoritarian regimes, but when they are combined the effect doubles. Section 4.2 confirms this story and adds some further aspects.

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[11] The tables use four binary dummies *OMA*, *O*, *M*, and *A*. *OMA* is one if the country is in the *OMA* nexus, and zero otherwise, *O* is one if the country is an OPEC country, and zero otherwise, etc.

Table 4a. Analyzing the three groups, N = 12,332 observations

							Explained	
			Part A. Explaining polity: $P = \alpha + \beta y + \lambda OMA + \gamma_1 O + \gamma_2 M + \gamma_3 A + u$					
	Constant	Income	OMA	O, OPEC	M, MENA	A, Arab	aR^2	ΔaR^2
(1)	-25.6 (-55)	*3.1* (58)					0.211	Basis
(2)	-26.5 (-62)	3.4 (66)	-7.0 (-45)				0.322	0.110 Basis
(3)	-26.7 (-62)	3.4 (67)	-5.2 (-20)	-2.5 (-8)			0.325	0.114 0.004
(4)	-27.4 (-64)	3.5 (69)	-3.3 (-14)		-5.9 (-20)		0.343	0.132 0.022
(5)	-27.7 (-66)	3.5 (70)	-3.2 (-15)			-7.0 (-25)	0.354	0.142 0.032
(6)	-28.8 (-69)	3.6 (73)	4.0 (9)	-7.3 (-21)	-4.3 (-8)	-6.1 (-12)	0.375	0.164 0.054
			Part B. Explaining polyarchy: $V = \alpha + \beta y + \lambda OMA + \gamma_1 O + \gamma_2 M + \gamma_3 A + u$					Explained	
	Constant	Income	OMA	O, OPEC	M, MENA	A, Arab	aR^2	ΔaR^2
(7)	-0.87 (-56)	0.15 (81)					0.349	Basis
(8)	-0.91 (-63)	0.16 (94)	-0.26 (-51)				0.460	0.112 Basis
(9)	-0.92 (-64)	0.16 (95)	-0.20 (-22)	-0.09 (-9)			0.464	0.115 0.003
(10)	-0.94 (-67)	0.16 (95)	-0.13 (-16)		-0.22 (-22)		0.481	0.132 0.020
(11)	-0.95 (-67)	0.16 (98)	-0.14 (-19)			-0.24 (-25)	0.487	0.138 0.026
(12)	-0.99 (-71)	0.17 (103)	0.14 (10)	-0.27 (-23)	-0.21 (-12)	-0.16 (-10)	0.508	0.160 0.048

Table 4b. Analyzing the three sub-groups, all N = 12,332 observations

							Explained	
			Part C. Explaining polity: $P = \alpha + \beta y + \lambda OMA + \gamma_1 Oo + \gamma_2 Ov + \gamma_3 Mo + u$					
	Constant	Income	OMA	Oo, OPEC only	Ov, overlap	Mo, MENA only	aR^2	ΔaR^2
(13)	-25.3 (-55)	3.11 (57)		-2.46 (-9)			0.217	Basis
(14)	-27.4 (-64)	3.46 (69)	-9.20 (-49)	5.92 (20)			0.343	0.126
(15)	-29.1 (-68)	3.61 (71)			-12.50 (-49)		0.338	Basis
(16)	-28.6 (-68)	3.60 (72)	-4.15 (-23)		-8.75 (-29)		0.366	0.028
(17)	-25.4 (-55)	3.13 (58)				-4.42 (-15)	0.226	Basis
(18)	-26.7 (-62)	3.38 (67)	-7.75 (-43)			2.52 (8)	0.325	0.099
			Part D. Explaining polyarchy: $V = \alpha + \beta y + \lambda OMA + \gamma_1 Oo + \gamma_2 Ov + \gamma_3 Mo + u$					Explained	
	Constant	Income	OMA	Oo, OPEC only	Ov, overlap	Mo, MENA only	aR^2	ΔaR^2
(19)	-0.86 (-55)	0.149 (81)		-0.10 (-11)			0.355	Basis
(20)	-0.94 (-67)	0.162 (98)	-0.34 (-55)	0.22 (22)			0.481	0.126
(21)	-1.00 (-70)	0.168 (99)			-0.46 (-54)		0.473	Basis
(22)	-0.98 (-71)	0.167 (102)	-0.16 (-27)		-0.32 (-32)		0.503	0.029
(23)	-0.87 (-56)	0.150 (82)				-0.17 (-17)	0.364	Basis
(24)	-0.92 (-64)	0.159 (95)	-0.16 (-27)			0.09 (9)	0.464	0.100

The numbers in parenthesis are t-ratios – above 5 they are rounded to the nearest integer. The aR^2 is the adjusted R^2. The ΔaR^2 says how much the aR^2 increases compared to the basis that is to the left. The number of observations for the groups and sub-groups are reports in Table 2.

The MENA-only effect is stronger effects than the OPEC-only effect, indicating that the Muslim culture theory is stronger than the oil theory, but it is dubious that the difference is significant given the spatial effect from the Overlap group is stronger for MENA-only.

4.   Studying the nonlinearity with kernel regressions

Figure 1 showed that the path of the two OMA-curves has a peak. Before the peak, the slope is positive and after it is negative. The linear tools in section 3 gave averages over the observations for the whole scale. Consider the same hump-shaped curve. If most observations are in the positive part before the hump, it will dominate the linear estimate, but if most observations are negative the part after the hump will dominate. Table 5 reports the fraction of observations after the peak. The table also gives the number of observations supporting all kernel estimate below. Note also that all curves are estimated with bandwidth $bw = 0.4$.

Table 5. The fraction of observations after the peak for y = 9.5 in the five groups

	Country group	Number of countries and obs.	Both indices After peak Number	In %
(1)	OPEC	18	1,224	332	27.1
(2)	OPEC-only	8	642	77	12.0
(3)	Overlap	10	582	255	43.8
(4)	MENA-only	8	525	21	4.0
(5)	MENA	18	1,107	276	24.9
(6)	Arab	16	940	240	26.4

4.1   The kernels for the three groups: OPEC, MENA, and Arab

The curves are all below the middle of the regime scales, i.e., they are in the autocracy range.

Figure 3. The OPEC sample, kernel regressions for $P(y)$ and $V(y)$
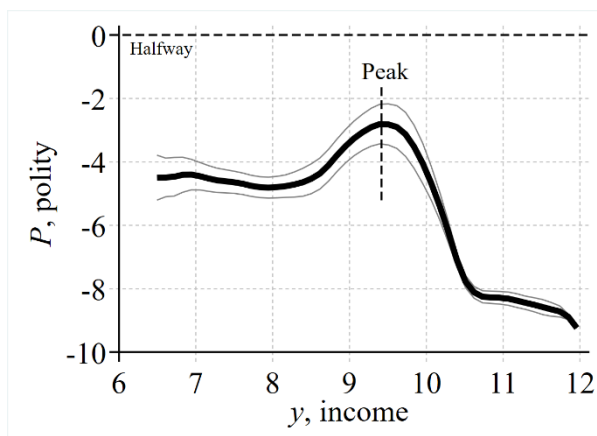
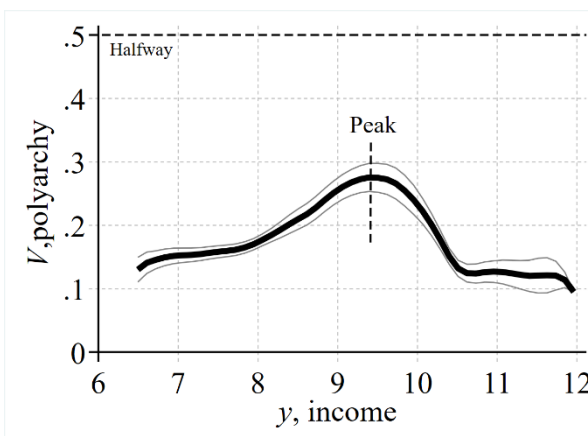Figure 3a. Polity   Figure 3b. Polyarchy

Figure 3 is for the OPEC. The two $X(y)$-curves look like the OMA curves in Figure 1. The curves are non-linear, showing a clear peak in the middle, but on average the slopes are negative, as also found in Tables 4 and 5. The negative slope of the linear approximation is dubious for the Polyarchy index. The peak on the curves is at $y = 9.4$ that is about \$ 12,000.

Figure 4. The kernels for the groups and the two indices.

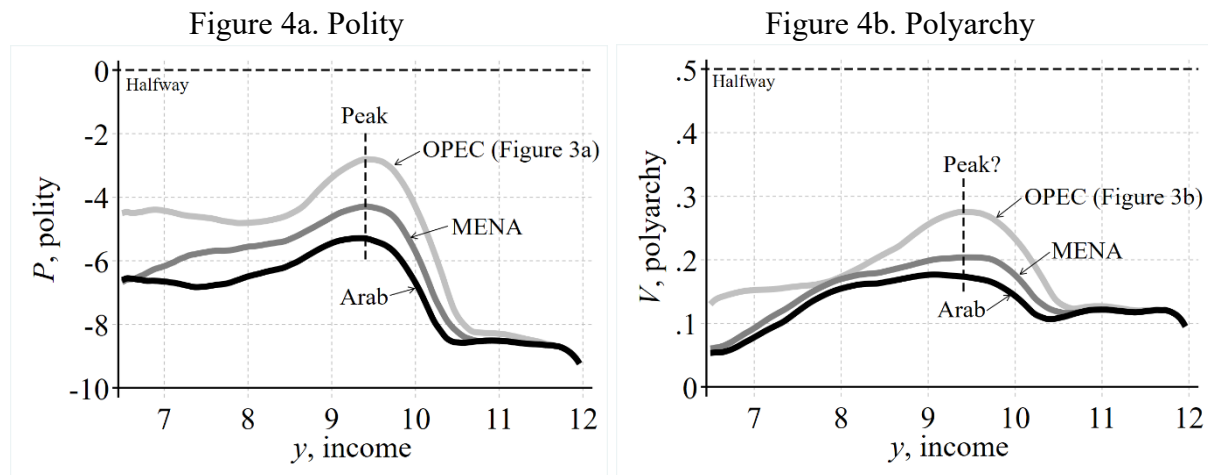Figure 4a. Polity   Figure 4b. Polyarchy

Figure 4 show the same curves for the OPEC group (in light gray) but adds the curves for the MENA and Arab group. The three curves have the same form for polity but for polyarchy the MENA and Arab curves have a flatter form with a less clear peak.

The most important observation from Figure 4 is that the PV-levels differ so that it is highest for the OPEC-curve. The middle curve is the MENA-curve, while the Arab-curve is the lowest, in spite of the great overlap to the MENA-curve. These findings become clearer for the three sub-groups discussed next.

4.2   Kernels for the three sub-groups: OPEC-only, Overlap, and MENA-only

Figures 6a and b show the kernels for the three sub-groups (2) to (4) from Table 1 and 6.

Two curves are added for easy comparison, as they are shown before they are in light gray. The Main curves are the relevant part of the two transition curves P_M and P_V from Figure 1. They show that all other curves are lower. The MENA curves from the last section are dashed. The three solid curves are new. When interpreting these curves, the reader should recall the argument in section 2.4, and note the robustness analysis in section A2 of the Appendix.

Figure 5. The kernels for the sub-groups and two indices.
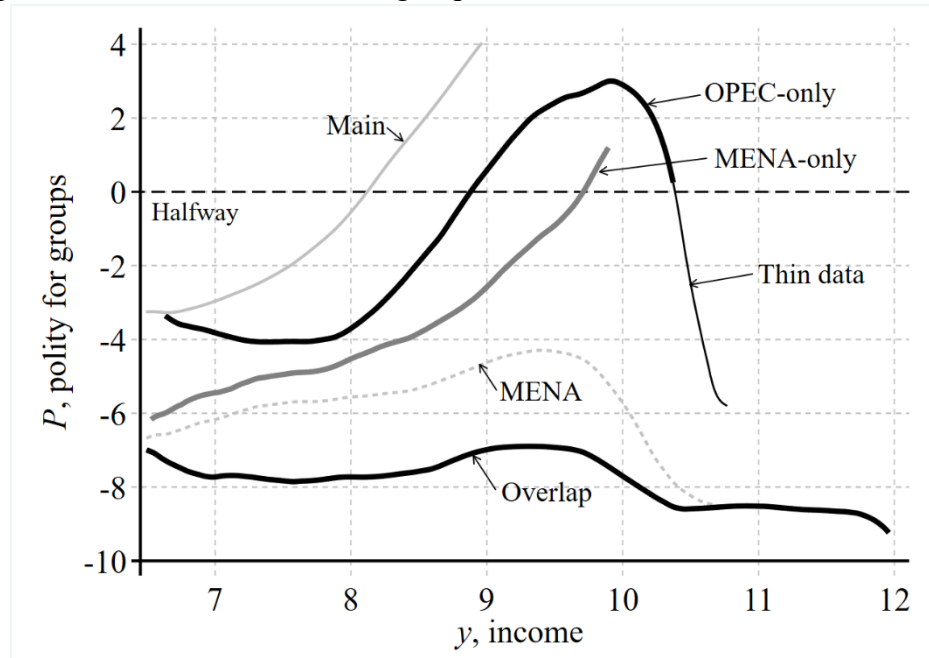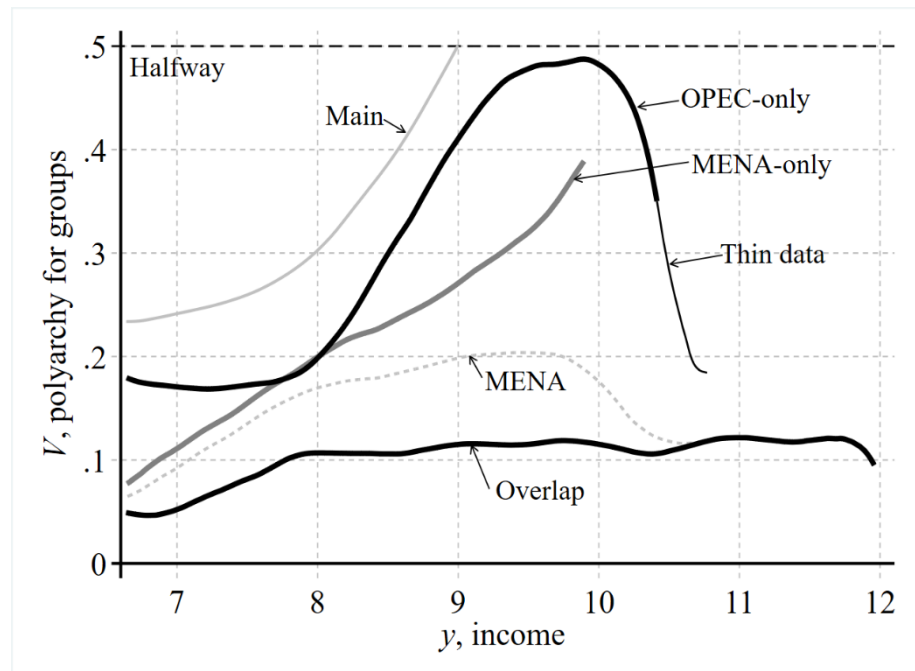
The **OPEC-only** curves are for eight countries outside the MENA area. It represents the pure oil-effect. It is the highest curve, and for the polity index it even extends into the democratic region of the graph. Thus, the countries may have been on the transition path, but then the oil effect sets in, and creates a strong peak. As mentioned, the short-run effect of oil is only that income increases so that the curves shift to the right, while society remains the same. Thus, the OPEC-only curve may be on the Main curve at the start. However, then the oil mechanism causes the curve to turn down. The two graphs have a positive slope for most of

their path as expected from Table 2.

The other two curves for the sub-groups contain the effect of Islam – they are all lower so there is a clear effect as expected.

The ***Overlap*** curve is for countries that are both OPEC and Muslim, so both theories work. As expected, it is the lowest curve. The richest oil countries are in Overlap, so the data for OPEC and

The ***MENA-only*** curves are for eight MENA countries without oil, so they should have no peak, and they do not. They have a positive slope throughout as expected from Table 2. Table 5 shows that they have only 4% observations above the peak at 9.5, so even if they had a peak, it would be hard to see. Thus, the main point to note by comparing with Figure 1 is that the rising path is well below the one in the Main sample. The MENA-only may be seen as the transition in non-oil Muslim/Arab countries. At the income $y = 9$ it is 7 polity points and 0.23 polyarchy points below the Main curve. It certainly speaks of a large effect. However, it is dragged down by spatial effects within the Arab area.

5.   Conclusion

This paper deals with the OMA (OPEC/MENA/Arab) exception to the democratic transition and try to sort out the parts of the nexus. The overlap of the groups and spatial effects within the Arab group makes it difficult. But still some results emerge from the efforts.

Two theories have been discussed. The oil theory for OPEC group, and the Muslim culture theory for the MENA/Arab group. Both theories appear to be true. Thus, a Muslim oil country should have a particularly low level of democracy, and indeed, the ten countries in the Overlap group, is the most authoritarian group. Also, the group of OPEC-only countries that are outside the MENA area is the least authoritarian group. However, the hump-shape found on the kernel curve for both the OPEC and the MENA-group suggests that oil is a strong factor.

Two remarks should be added: (1) The empirical analysis of the Main-sample (elsewhere) uses large data sets and reaches strong conclusions. This paper uses much fewer observations, with strong spatial effects, so the conclusions are less strong. (2) The OMA exception does deviate very much from the Main group of all other countries. One may argue that exceptions are of a temporary nature only, and that the Arab Spring was a first attempt to move the most exceptional country group closer to the mainstream. However, the Arab world has also seen waves of violent reaction.

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Appendix:

A1. The 26 countries in the samples

Table A1. Countries of the OPEC-only sample, see Figure A1

Nr	Country	group	Polity, P			Polyarchy, V		
			N	Span	Start	N	Span	Start
1	Angola	Africa	44	44	1975	44	44	1975
2	Congo Br	Africa	59	59	1960	59	59	1960
3	Ecuador	La Am	120	149	1870	122	149	1870
4	Equ. Guinea	Africa	51	51	1968	51	51	1968
5	Gabon	Africa	59	59	1960	59	59	1960
6	Indonesia	Asia	63	70	1949	70	70	1949
7	Nigeria	Africa	58	59	1960	59	59	1960
8	Venezuela	La Am	189	189	1819	190	200	1819

Table A2. Countries of the Overlap sample. Both in OPEC and MENA, see Figure A2

Nr	Country	Group	Polity, P			Polyarchy, V		
			N	Span	Start	N	Span	Start
1	Algeria	Arab	57	57	1962	57	57	1962
2	Bahrain	Arab	48	48	1971	48	48	1971
4	Iran	nA	70	199	1820	70	149	1820
3	Iraq	Arab	62	69	1950	69	69	1950
4	Kuwait	Arab	55	56	1963	69	69	1950
6	Libya	Arab	60	68	1951	68	68	1951
7	Oman	Arab	69	69	1950	69	69	1950
8	Qatar	Arab	48	48	1971	48	48	1971
9	Saudi Arabia	Arab	69	69	1950	72	196	1823
10	UAE	Arab	46	48	1971	46	48	1971

Table A1. Countries of the MENA-only sample, see Figure A3

Nr	Country	Group	Polity, P			Polyarchy, V		
			N	Span	Start	N	Span	Start
1	Egypt	Arab	69	69	1850	72	199	1820
2	Jordan	Arab	66	66	1953	66	66	1953
3	Lebanon	Arab	39	69	1950	69	69	1950
4	Morocco	Arab	66	199	1820	66	199	1820
5	Syria	Arab	66	69	1950	69	69	1950
6	Tunisia	Arab	60	60	1959	63	63	1956
7	Turkey	nA	99	100	1820	100	199	1820
8	Yemen	Arab	60	69	1950	69	69	1950

Bahrain and Oman are added to the OPEC group, as they are close to OPEC. It also makes OPEC and MENA symmetrical, with 18 countries in each group. MENA means Middle East and North Africa. OPEC is Tables A1 and A2, while MENA is Tables A2 and A3. The two non-Arab MENA countries Iran and Turkey are classified with **nA**. Both countries have had long recent periods of secularization, but now Iran is a Muslim theocracy. The sample holds 16 Arab countries. The League of Arab States includes Comoros, Djibouti, Mauritania, Palestine, Somalia, and Sudan. These borderline countries are not included in the present analysis.

A2. The robustness of the kernel curves

Figures A1, A2, and A3 cover the countries listed in Tables A1, A2, and A3, respectively. The figures show the bundles of kernel-curves that appear when each country is deleted. The two countries that matter most are indicated in each figure. In each case the bundle for both democracy indices look similar. The country at the top, as Gabon on Figure A1, means that if the country is excluded, the average gets less authoritarian. The country at the bottom, as Turkey on Figure A3, means that if the country is excluded the average gets more authoritarian.

Figure A1.1. Polity. The bundle of eight OPEC-only curves for the deletion of each country, see Figure 5a.

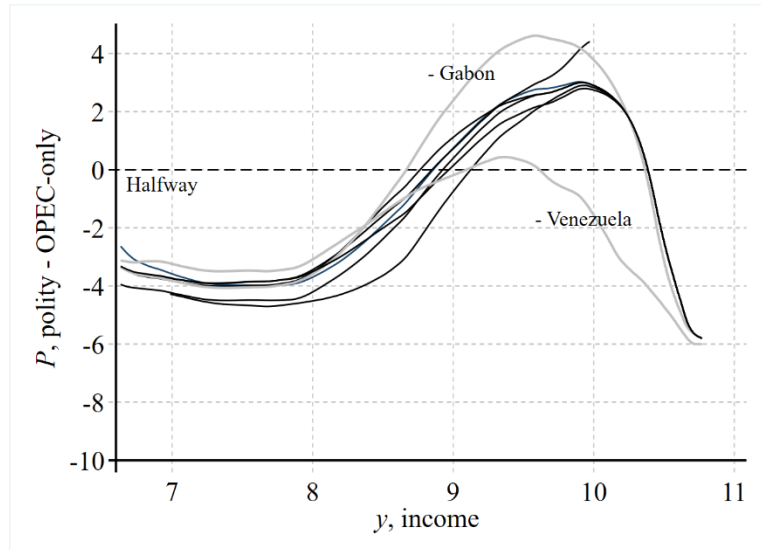The two bundles for OPEC-only are relatively high, and has a strong peak.

Figure A1.2. Polyarchy. The bundle of eight OPEC-only curves for the deletion of each country, see Figure 5b.
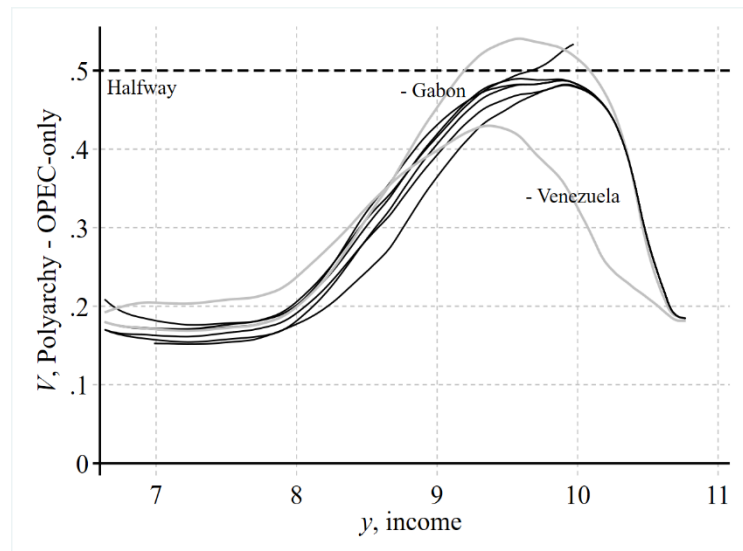

Figure A2.1. Polity. The bundle of ten Overlap curves for the deletion of each country, see Figure 5a.

The two Overlap bundles are very low as they never leave the low quarter of the ranges of the indices.
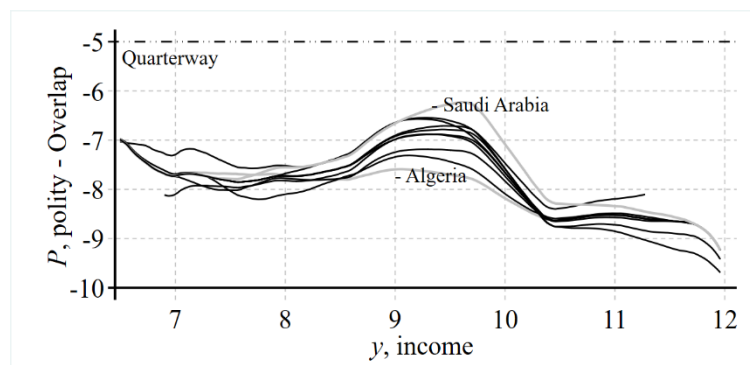
Figure A2.2. Polyarchy. The bundle of
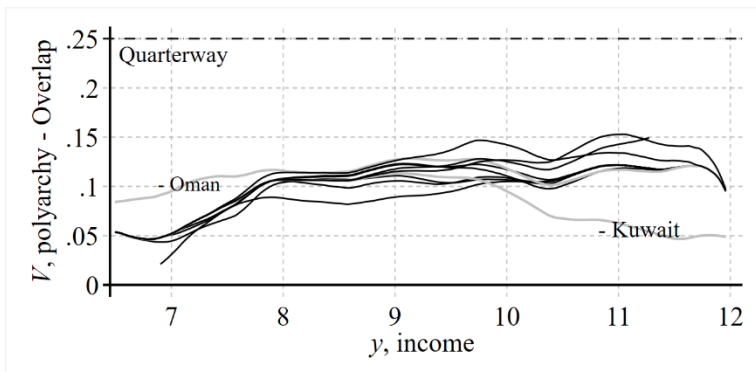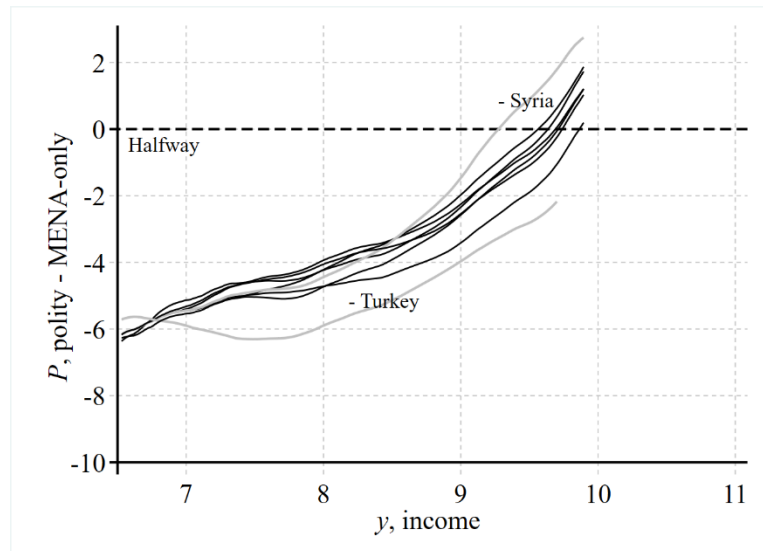ten Overlap curves for the deletion
of each country, see Figure 5b.

Figure A3.1. Polity. The bundle of
eight MENA-only curves for the deletion
of each country, see Figure 5a.

The two MENA-only bundles
are fairly high and have no peak.

Figure A3.2 Polyarchy. The bundle of
eight MENA-only curves for the deletion
of each country, see Figure 5b.