Supplemental online material

S1: Data matrices, rescaling operations and calibration

Raw data matrix

	(1) Violent suppression of protests (V)			(2) Material and Security Interests (I)							(3) Historical economic coercion (H)	(4) Transitional void (T)	Outcome (S) (sanctions in 2011-2012)
Conditions / **Cases**	(1.1) PII decrease	(1.2) Fatalities	(1.3) Intervention Correction Indicator: 1 = Did not send troops 2 = Did send troops	(2.1) Oil reserves ranking	(2.2) Gas reserves ranking	(2.3) Trade (exports)	(2.4) Trade (imports)	(2.5) Major non-NATO Ally	(2.6) Presence of major Al-Qaeda affiliate	(2.7) Proximity			
Tunisia	1	200-300	1	52	58	0.8 %	0.6 %	0	0	1	0	1	1
Egypt	3	846	1	25	17	1.1 %	0.5 %	1	0	1	0	1	1
Libya	3	1000	1	9	22	0.5 %	1.9 %	0	0	1	1	0	1
Syria	2	900-1000	1	33	45	0.3 %	0.2 %	0	0	1	1	0	1
Lebanon	1	< 10	1	154	157	0.3 %	< 0.2 %	0	0	1	0	0	0
Jordan	1	< 10	1	98	87	< 0.2 %	< 0.2 %	1	0	0	0	0	0
Morocco	1	< 10	1	99	100	1 %	0.5 %	1	0	1	0	0	0
Algeria	1	< 10	1	16	10	1.2 %	1.4 %	0	1	1	0	0	0
Yemen	0	2000	1	30	32	< 0.2 %	< 0.2 %	0	1	0	0	1	0
Oman	4	< 10	1	24	28	0.2 %	< 0.2 %	0	0	0	0	0	0
Kuwait	1	< 10	1	6	21	0.3 %	0.3 %	1	0	0	0	0	0
Bahrain	5	> 50	1	69	54	< 0.2 %	< 0.2 %	1	0	0	0	0	0
Saudi Arabia	2	10	2	2	5	1.7 %	1.1 %	0	1	0	0	0	0

Own elaboration based on: BBC 2011a, 2011b; BBC, 2013; Brownlee et al. 2015; CIA 2014a, 2014b; Cingranelli et al. 2014; CNN 2011; Eurostat 2011; Freedom House 2015; Global Security 2012; Kreutz 2005; Matthiesen 2013, 73; Mroue 2011; U.S. Department of State, 2011. Note: [c] = Composite.

Notes: (1.2): *the number of casualties consists of estimates referring to the number of fatalities during the Arab Spring protests, either during the first year (2011) or until the moment sanctions were imposed.* ***(2.3 and 2.4):*** *% of imports or exports of the EU's total extra-EU imports or exports*

Rescaling of conditions and creation of macro-conditions

Condition: V

Conditions / Cases	(1.1) PII decrease	(1.1) PII decrease (Rescaled)	(1.2) Fatalities	(1.2) Fatalities (Rescaled)	(1.3) Intervention Correction Indicator: 1 = Did not send troops 2 = Did send troops	(1) Violent suppression of protests (Vinitial)
Tunisia	1	0.2	200-300	0.3	1	0.25
Egypt	3	0.6	846	0.85	1	0.73
Libya	3	0.6	1000	1	1	0.8
Syria	2	0.4	900-1000	1	1	0.7
Lebanon	1	0.2	< 10	0	1	0.1
Jordan	1	0.2	< 10	0	1	0.1
Morocco	1	0.2	< 10	0	1	0.1
Algeria	1	0.2	< 10	0	1	0.1
Yemen	0	0	2000	1	1	0.5
Oman	4	0.8	< 10	0	1	0.4
Kuwait	1	0.2	< 10	0	1	0.1
Bahrain	5	1	> 50	0.05	1	0.53
Saudi Arabia	2	0.4	10	0.01	2	0.41

Notes: (1) to obtain the final score (rightmost column), the mean of the rescaled conditions is calculated. This mean is then multiplied with the intervention correction indicator.
(2) Regarding indicator 1.2, variation above a certain threshold (i.e. 1000 casualties) is not considered to be meaningful.

Condition: I

Conditions / Cases	(2.1) Oil reserves	(2.1) Oil reserves (Rescaled)	(2.2) Gas reserves positions	(2.2) Gas reserves (Rescaled)	(2.3) Trade (exports)	(2.3) Trade (exports) (Rescaled)	(2.4) Trade (imports)	(2.4) Trade (imports) (Rescaled)	(2.5) Major non-NATO Ally	(2.6) Presence of major Al-Qaeda affiliate	(2.7) Proximity	(2) Material and Security Interests (Iinitial)
Tunisia	52	0.49	58	0.44	0.8 %	0.47	0.6 %	0.32	0	0	1	0.39
Egypt	25	0.77	17	0.87	1.1 %	0.65	0.5 %	0.26	1	0	1	0.65
Libya	9	0.93	22	0.82	0.5 %	0.29	1.9 %	1	0	0	1	0.58
Syria	33	0.68	45	0.58	0.3 %	0.18	0.2 %	0.11	0	0	1	0.36
Lebanon	154	0	157	0	0.3 %	0.18	< 0.2 %	0	0	0	1	0.17
Jordan	98	0.02	87	0.14	< 0.2 %	0	< 0.2 %	0	1	0	1	0.31
Morocco	99	0.01	100	0	1 %	0.59	0.5 %	0.26	1	0	1	0.41
Algeria	16	0.86	10	0.95	1.2 %	0.71	1.4 %	0.74	0	1	1	0.75
Yemen	30	0.71	32	0.72	< 0.2 %	0	< 0.2 %	0	0	1	0	0.35
Oman	24	0.78	28	0.76	0.2 %	0.12	< 0.2 %	0	0	0	0	0.24
Kuwait	6	0.96	21	0.83	0.3 %	0.18	0.3 %	0.16	1	0	0	0.45
Bahrain	69	0.32	54	0.48	< 0.2 %	0	< 0.2 %	0	1	0	0	0.26
Saudi Arabia	2	1	5	1	1.7 %	1	1.1 %	0.58	0	1	0	0.65

Notes: (1) to obtain the final score (rightmost column), the mean of all rescaled conditions and dichotomous conditions is calculated. (2) Regarding indicators 2.1 and 2.2, the influence of the outlier (i.e. Lebanon) is eliminated. If a state's position is 100 or above 100, it automatically scores 0 on the rescaled condition. In other words, the difference between, for instance, position 100 (almost no resources) and position 150 (no resources at all) is considered irrelevant.

Data matrix with macro-variables, ready for calibration

Cases	(1) Violent suppression of protests (Vinitial)	(2) Material and security interests (Iinitial)	(3) Historical Coercion (H)	(4) Transitional Void (T)	Outcome (S)
Tunisia	0.25	0.39	0	1	1
Egypt	0.73	0.65	0	1	1
Libya	0.8	0.58	1	0	1
Syria	0.7	0.36	1	0	1
Lebanon	0.1	0.17	0	0	0
Jordan	0.1	0.31	0	0	0
Morocco	0.1	0.41	0	0	0
Algeria	0.1	0.75	0	0	0
Yemen	0.5	0.35	0	1	0
Oman	0.4	0.24	0	0	0
Kuwait	0.1	0.45	0	0	0
Bahrain	0.53	0.26	0	0	0
Saudi Arabia	0.41	0.65	0	0	0

A calibrated data matrix can be found in Annex 1. The qualitative anchors used in the calibration process are included below:

Calibration (direct method of calibration [cf. Ragin, 2008])

Violent suppression (V)	**Material and security interests (I)**
(0.15; 0.35; 0.75)	**(0.25; 0.50; 0.60)**
The main qualitative difference is between those states in which violent suppression of protests was virtually absent or limited (< 0.35) and those states where the reverse is true (> 0.35) (i.e. the point of maximal ambiguity is 0.35).	The point of maximal ambiguity is set at 0.5. It clearly separates cases where EU interests are relatively low from cases where EU interests are relatively high.
Lebanon, Jordan, Morocco, Algeria and Kuwait are fully out the set (< 0.15), whereas Libya is believed to be fully in (>0.75).	While Egypt, Saudi Arabia and Algeria are fully in the set (> 0.6), Lebanon and Oman are fully out the set (< 0.25).

From a substantive point of view, these thresholds make sense. They are in line with the researcher's case knowledge.

Some robustness checks

Change in anchors (ceteris paribus)	Impact on the analysis of sufficiency
V: 0.05, 0.35, **0.95**	The model loses some explanatory power, but results do not fundamentally change. All positive cases, except Tunisia, can be explained as before. All negative cases, except Yemen, are explained as before.

I: 0.05, 0.50**, 0.95**	Idem
V: 0.15**, 0.40,** 0.75	The model loses some explanatory power, but results do not fundamentally change. All positive cases, except Tunisia, can be explained as before. All negative cases, except Oman, are explained as before.
V: 0.15**, 0.30,** 0.75	The model loses some explanatory power, but results do not fundamentally change. Only Yemen is not explained.
I: 0.25, **0.55**, 0.60	The results do not fundamentally change.
I: 0.25, **0.45**, 0.60	The model loses some explanatory power, but results do not fundamentally change. All positive cases, except Tunisia, can be explained as before. All negative cases, except Kuwait, are explained as before.

S2: Analysis of necessity

No single conditions are necessary for the presence of EU sanctions.[1] Stated differently, none of this study's conditions needs to be present (or absent) each time the EU imposes sanctions. For the negative outcome (i.e. absence of EU sanctions) one condition seems to be necessary: the lack of historical coercion (~H ← ~S). This means that not being sanctioned *before* the Arab Spring is a *conditio sine qua non* for not being sanctioned *during* the Arab Spring. Looking at all parameters of fit, one could, however, dismiss this condition as trivial.[2]

Table a. Analysis of necessity for the positive outcome

Condition	Consistency	Coverage	Relevance (ron)
V	0.76	0.51	0.71
I	0.57	0.43	0.72
H	0.5	1	1
T	0.5	0.67	0.91
~V	0.24	0.14	0.49
~I	0.43	0.22	0.47
~H	0.5	0.18	0.18
~T	0.5	0.2	0.27

Based on calculations in R's QCA package (Duşa and Thiem, 2016)

Table b. Analysis of necessity for the negative outcome

Condition	Consistency	Coverage	Relevance (ron)
V	0.32	0.49	0.70
I	0.33	0.57	0.77
H	0.0	0.0	0.85
T	0.11	0.33	0.83
~V	0.68	0.86	0.86
~I	0.67	0.78	0.75
~H	1	0.82	0.5
~T	0.89	0.8	0.6

Based on calculations in R's QCA package (Duşa and Thiem, 2016)

[1] Consistency threshold = 0.9.

[2] While the consistency (1) and coverage (0.82) measures are high, the relevance of necessity is low (0.5) (see Schneider and Wagemann [2012, 141-146, 278, 236-237] for more information on these parameters of fit).

S3: Simplifying assumptions

To obtain the intermediate solution, this paper does not use Ragin's Standard Analysis (2008b) or blindly follow all guidelines of Schneider and Wagemann's Enhanced Standard Analysis (ESA) (2012), a procedure recently criticized by Cooper and Glaesser (2015). Yet, it does follow the common advice to make use of case knowledge and theoretical insights to decide upon which simplifying assumptions should be included (cf. Ragin 2008b; cf. Cooper and Glaesser 2015, 13-14). As such, it might be argued that only the least controversial parts of ESA are taken into account: avoiding the inclusion of simplifying assumptions that are *implausible* (cf. Schneider and Wagemann 2012, 198-211).[3] Additionally, this paper avoids making one kind of incoherent assumptions: contradictory simplifying assumptions (cf. Schneider and Wageman 2012, 204). This implies that an identical simplifying assumption cannot be used for both the positive and negative outcome.

a) Positive outcome

Most parsimonious solution (7 simplifying assumptions):
It is assumed that the following combinations are associated with a positive outcome:

1. ~V * I * ~H * T
2. ~V * I * H * ~T
3. ~V * I * H * T
4. ~V * ~I * H * ~T
5. ~V * ~I * H * T
6. V * I * H * T
7. V * ~I * H * T

Intermediate solution (5 simplifying assumptions):
It is assumed that the following combinations are associated with a positive outcome:

1. ~V * I * ~H * T
2. ~~~V * I * H * ~T~~~
3. ~V * I * H * T
4. ~~~V * ~I * H * ~T~~~
5. ~V * ~I * H * T

[3] Implausible assumptions are assumptions that go against 'common sense' or 'formal logic' (Schneider and Wagemann, 2012: 199, 206). In this paper barred assumptions do not necessarily contradict formal logic, but they are very unlikely to occur.

6. V * I * H * T
7. V * ~I * H * T

Based on R's QCA package (Duşa and Thiem, 2016).

The simplifying assumptions of the most parsimonious solution that are deemed implausible are crossed out. To obtain the intermediate solution, only the five remaining simplifying assumptions are used (1, 3, 5, 6 and 7). Why are simplifying assumptions 2 and 4 barred from the analysis? Based on case knowledge, theoretical insights and counterfactual reasoning (cf. Cooper and Glaesser 2015, 13-14), one could argue that it is unlikely that EU sanctions are imposed when neither the trigger of transitional void (~T), nor the trigger of severe violent suppression (~V) are present, even though sanctions had been imposed in the past (H).[4] Imagine for instance that a state leader does *not* resort to severe human rights violations (~V) in response to peaceful protests, yet remains in power (~T). One cannot assume that in this hypothetical situation the EU necessarily invokes sanctions. In contrast, all other simplifying assumptions are deemed plausible. When a regime is ousted (T) that had already been subject to sanctions in the past (H), it is likely for the EU to invoke sanctions against this ousted regime (simplifying assumptions 3, 5, 6 and 7). If there is a situation of transitional void (T) in a country where the EU has important interests to defend (I), it is not too far-fetched to assume that the EU would impose sanctions to signal its support to the new leaders (simplifying assumption 1, but also 3 and 6).

[4] This counterfactual reasoning, just like the article more generally, is confined to the Arab Spring context.

b) *Negative outcome*

For the preferred solution (most parsimonious solution a), no simplifying assumptions are made. For the alternative solution (most parsimonious solution b), one simplifying assumption is made:

Most parsimonious solution b (one simplifying assumption):

It is assumed that the following combination is associated with a negative outcome:

V * ~I * H * T

Two problems are associated with this simplifying assumption. Firstly, it is incoherent since it contradicts simplifying assumption 7 discussed above. Secondly, it is implausible: if a regime that violently suppressed protests and that had already been sanctioned in the past is ousted, we do not expect a *lack* of EU sanctions. Most parsimonious solution a, which does not make this problematic simplifying assumption, is therefore preferred.

S4: Analysis of sufficiency with Yemen as a positive case

Coding Yemen as a positive case shifts the focus from sanctions regimes with at least one autonomous measure invoked in the period 2011-2012, to sanction regimes that are either (partially) autonomous or that merely implement UN Security Council Resolutions invoked during the period 2011-2015.

Table a. Presence of sanctions: solutions and measures of fit ($S_{Yemen} = 1$)

Solutions	Path nr.	Causal paths	Cases	Consistency	Raw coverage	Unique coverage	Solution consistency and coverage
Conservative	1.1	V * H * ~T → S	Libya; Syria	1	0.38	0.38	1
		+					0.90
	1.2	~I * ~H * T → S	Tunisia; Yemen	1	0.33	0.14	
		+					
	1.3	V * ~H * T → S	Egypt, Yemen	1	0.38	0.19	
Intermediate	2.1	V * H → S	Libya, Syria	1	0.38	0.38	1
		+					0.98
	2.2	T → S	Tunisia; Yemen; Egypt	1	0.6	0.6	
Most parsimonious	3.1	H → S	Libya, Syria	1	0.4	0.4	1
		+					1
	3.2	T → S	Tunisia; Yemen; Egypt	1	0.6	0.6	

Own elaboration based on R's QCA package (Duşa and Thiem, 2016). Note: the intermediate solution is obtained by barring those simplifying assumptions that are considered implausible (For an overview of simplifying assumptions see: S3). The same simplifying assumptions are used as in the original analyses.

Table b. Absence of sanctions: solutions and measures of fit ($S_{Yemen} = 1$)

Solutions	Causal path	Cases	Consistency	Raw coverage	Unique coverage	Solution consistency and coverage
Conservative, Intermediate and most parsimonious	~H * ~T	Lebanon, Jordan; Morocco, Algeria, Kuwait; Oman, Bahrain; Saudi Arabia	1	1	1	1 1

Own elaboration, based on R's QCA package (Duşa and Thiem, 2016).

S5: A three-conditions model resulted in contradictory configurations

Originally, a model without transitional void (T) was constructed. Yet, this three-conditions model (V, I, H) resulted in a truth table characterized by contradictory configurations.[5] Since it is best practice to resolve such contradictions (Rihoux and Lobe 2009, 233-234), a further look was taken at the cases (in particular Tunisia and Egypt) and the Arab Spring literature. This resulted in the decision to add 'transitional void' to the model. Granted, the addition of a fourth condition intensifies the risk of individualizing explanations (Rihoux and De Meur 2009, 48) and increases the number of logical remainders. At the same time, it results in a contradictions-free truth table, thereby improving the model's explanatory power and recognizing that Tunisia and Egypt are unique cases in which the (underexplored) variable of transitional void plays a role (cf. Table 1).

[5] Contradictory configurations are truth table rows that include both cases with a positive outcome and cases with a negative outcome.

Bibliography (sources not included in reference list)

Cooper, Barry and Judith Glaesser. 2015. “Qualitative Comparative Analysis, Necessary Conditions, and Limited Diversity: Some Problematic Consequences of Schneider and Wagemann’s Enhanced Standard Analysis.” *Field Methods*.