Border Policies and Unauthorized Flows: Evidence from the Refugee Crisis in Europe

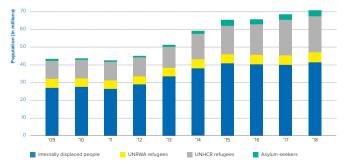
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The Refugee Crisis

The Refugee Crisis in the World and in Europe

- Persistent increase in global population of forcedly displaced individuals
- 79.5 million (UNHCR, 2019): IDP (45.7) + Refugees (26) + Asylum seekers (4.2) + Venezuelans abroad (3.6)





Where do they come from?

 Refugees: 68% from 5 countries: Siria (6.6 m), Venezuela (3.7), Afghanistan (2.7 m), South Sudan (2.2 m), Myanmar (1.1 m).

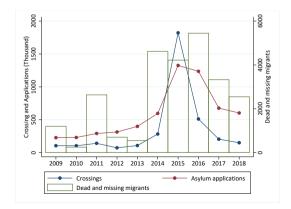
Where do they go?

- About 85% remain in developing countries (neighbouring or nearby countries)
- Only 16% in High Income Countries while 27% in Least Developed Countries (e.g. Bangladesh, Chad, Ethiopia, Sudan, Tanzania, Uganda)

— The Refugee Crisis

Europe - over the last ten years (2009-2018):

- 5.5 million asylum applications in EU28
- 3.5 million detected illegal crossings at external EU borders
- 26 thousand migrants dead/missing while crossing borders



We study the EU response to unauthorized flows at its external borders

- Europe expected to face strong migratory pressure [Hanson and McIntosh, 2016]
- During "refugee crisis", emphasis first on closing borders, then on outsourcing controls
- An EU agency, Frontex, is responsible for coordinating enforcement at the external EU borders (while individual member states control their own national borders)
- Conflicting / non-aligned priorities of member states within the EU
- Migrants' diversion towards routes further away is potentially desirable for single countries, while sub-optimal for EU as a whole
- Dublin Convention reinforces incentives for opportunistic behaviour

Three steps of our empirical analysis:

- **1** We document evidence of political cycle in enforcement (2009-2015)
- **2** We estimate the causal effect of enforcement on migrant flows (2009-2015)
- 3 We study deterrence and diversion effects of outsourcing border enforcement (2016 EU-Turkey deal)

Contribution:

- Border enforcement: area of public policy that absorbs vast resources but has received relatively little evaluation
- Most evidence on US-Mexico [Hanson and Spilimbergo, 1999, Gathmann, 2008, Angelucci, 2012, Allen et al., 2018, Bazzi et al., 2018, Chau et al., 2020] + few papers on Europe [Friebel et al., 2018, Aksoy and Poutvaara, 2019, Deiana et al., 2020, Battiston, 2020, Fasani and Weisser, 2020]

- Data

Data

We assembled an original dataset from Frontex (European Border and Coast Guard Agency):

1 illegal border crossings:

- third-country nationals detected by Member State authorities when entering or attempting to enter illegally the EU territory
- monthly data since 2009; by country or origin and route of entry in Europe

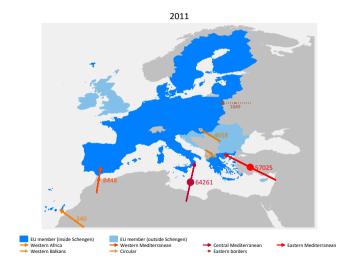
2 joint border enforcement operations:

Detailed info (duration, route, budget) on each implemented between Jan 2009 and Dec 2015:

Data

1) Illegal Border Crossings

1) Illegal Border Crossings



1) Illegal Border Crossings

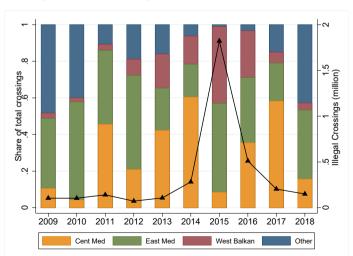


Figure: Total crossings and distribution across routes

-1) Illegal Border Crossings

Refugees or undocumented immigrants?

- A mix
- Asylum seekers must physically arrive in the territory of the host country in order to claim refugee status (little resettlements schemes in Europe)
- Asylum seekers generally arrive as undocumented migrants
- Economic migrants can join refugee flows

Illegal border crossings, first 15 nationalities: Syria, Afghanistan, Iraq, Pakistan, Albania, Eritrea, Kosovo, Somalia, Nigeria, Bangladesh, Tunisia, Palestine, Algeria, Iran, Morocco

— Data

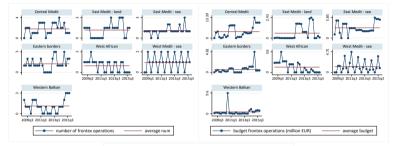
-2) Frontex Joint Operations

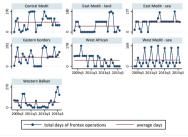
2) Frontex Joint Border Enforcement Operations

- Info on each joint border enforcement operation implemented by Frontex between Jan 2009 and Dec 2015
- Joint operations: participating EU countries contribute with officers, means of transport, vessels, financial resources
- **Frontex Role**: coordination and deployment of additional officers, experts, technical equipment to border areas under significant migratory pressure
- 365 joint operations: majority (247) are small return operation (e.g. coordinating charter flights) Our focus: 37 land and 52 sea operations
- **Three alternative indicators** of EU border enforcement along route *r* in period *t*:
 - **1** num_FX_{rt} : number of active operations
 - **2** $budget_FX_{rt}$: tot budget spent
 - 3 $days_FX_{rt}$: tot number of days of active operations

Data

2) Frontex Joint Operations





- Empirical Strategy
 - Estimating Equation

Estimating Equation

Equation derived from a RUM (random utility model) of migration decisions with multiple source countries, one destination country (the European Union) and multiple routes of entry

$$\ln att_{rct} = \alpha + \beta enf_{rt} + (\gamma_r \times \varphi_c) + (\varphi_c \times \tau_t) + (\gamma_r \times season_t) + \varepsilon_{rct}$$

- att_{rct} : IBCs on route r of immigrants from country c in quarter t
- enf_{rt} : border enforcement along route r in quarter t (num_FX_{rt} , $budget_FX_{rt}$ or $days_FX_{rt}$)
- route (γ_r) ; country (φ_c) ; quarter (τ_t)

FE capture: time-invariant source country-route determinant ($\gamma_r \times \varphi_c$), source country shock ($\varphi_c \times \tau_t$) and route-specific seasonality (γ_r)

Empirical Issues

Empirical Issues

1 Measurement

- Detected crossings
- *Positive detection effect* (more enforcement ⇒ more detected attempts) may conceal underlying *negative deterrence effect* (more enforcement ⇒ less actual attempts) → underestimate deterrence effect

2 Endogeneity of Enforcement

- More border enforcement when/where larger inflows are expected: upward bias in OLS
- Causal impact of enforcement on crossings: determinants of enforcement not correlated with expected crossing
- IV strategy: political cycle in enforcement

Empirical Analysis and Results

Empirical Analysis and Results

- **1** Political Cycle in Border Enforcement?
- **2** Border Enforcement and Crossings
- 3 Outsourcing Border Enforcement: Deterrence and Diversion effects

- Empirical Analysis and Results
 - -1) Political Cycle in Border Enforcement?

1) Political Cycle in Border Enforcement?

- Council of the EU, one of its main decision-making body; responsible for the European Budget: "the office of the Council Presidency offers its holder a privileged opportunity to shape the EU policy agenda in accordance with national interests." [Tallberg, 2003, p. 13].
- Evidence that holding the EU presidency allows member countries to influence the budget and its allocation (Aksoy [2010], Carnegie and Marinov [2017])
- If current EU presidency can influence the budget allocation to operations, do we observe more expenditure on "closest" routes?
- Main IV: Pre-determined six-months rotation of the presidency of the Council of the EU

- Empirical Analysis and Results
- 1) Political Cycle in Border Enforcement?
- **First Stage**: we instrument enforcement on route *r* in quarter *t* with the linear distance of the starting point of route *r* from the capital city of the state holding EU presidency in each quarter (*dist_EUpresid_{rt}*)
- Exclusion restriction: no direct effect of holding the EU presidency on undocumented immigrants' flows

Figure: EU presidency: Ireland (Jan-Jun 2013), Lithuania (Jul-Dec 2013), Greece (Jan-Jun 2014)



1) Political Cycle in Border Enforcement?

Figure: Enforcement and Distance from Current EU Presidency (First Stage)

	(1)	(2)	(3)	(4)	(5)	(6)
	num	ו_FX	Inbud	get_FX	Inday	/s_FX
dist_EUpres	-0.010***	-0.011***	-0.056***	-0.101***	-0.033***	-0.059***
	[0.003]	[0.002]	[0.009]	[0.023]	[0.006]	[0.015]
Route-country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Country-time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-route dummies	Yes	Yes	Yes	Yes	Yes	Yes
Period	2009-15	2009-13	2009-15	2009-13	2009-15	2009-13
Observations	2,940	2,100	2,940	2,100	2,940	2,100
R-squared	0.400	0.445	0.426	0.443	0.407	0.418
IV: F-stat	15.64	21.25	41.30	19.50	30.05	15.49

Magnitude: 1 SD increase in distance implies approximately a 0.1 SD reduction in enforcement

- Empirical Analysis and Results
 - 1) Political Cycle in Border Enforcement?

Is the FS stronger...

- ...for countries on external Schengen borders (Greece, Hungary, Italy, Malta, Spain)?
- ...for Greece (Jan-Jun 2014) than for Lithuania (Jul-Dec 2013)?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		num_FX		1	nbudget_F	X		Indays_FX	
dist_EUpres	-0.010***	-0.011***	-0.007**	-0.056***	-0.027***	-0.041***	-0.033***	-0.020***	-0.023***
	[0.003]	[0.003]	[0.003]	[0.009]	[0.007]	[0.012]	[0.006]	[0.005]	[0.008]
dist_EUpres*external borders		0.003			-0.085***			-0.038***	
		[0.004]			[0.010]			[0.008]	
dist_EUpres*LTU (Jul-Dec 2013)			-0.008			0.021			0.010
			[0.008]			[0.023]			[0.017]
dist_EUpres*GRC (Jan-Jun 2014)			-0.016**			-0.159***			-0.098***
			[0.008]			[0.048]			[0.032]
Route-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-route dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940

Figure: First Stage Heterogeneity

1) Political Cycle in Border Enforcement?

- Evidence of allocation of more EU budget to member countries with incoming elections [Schneider, 2013] or with larger shares of eurosceptics [Bouvet and Dall'Erba, 2010]
- Do we observe more enforcement on routes that lead to countries with incoming national elections?
- Alternative IV: incoming national elections in 2-3-4 closest countries to each route (d_elections) + incoming elections weighted by low trust in EU (Eurobarometer; d_elections * d_low_trustEU)

-1) Political Cycle in Border Enforcement?

Figure: Enforcement and Elections (First Stage)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
		num_FX		Ir	Inbudget_FX			Indays_FX		
d_elections	-0.048	-0.031	-0.060	0.898***	0.729**	1.154***	0.547**	0.424**	0.766***	
	[0.068]	[0.065]	[0.069]	[0.320]	[0.304]	[0.329]	[0.210]	[0.198]	[0.235]	
F-stat	0.506	0.222	0.743	7.866	5.742	12.29	6.780	4.602	10.62	
d_elect*d_ low_trustEU	0.129**	0.182***	0.251***	1.982***	1.894***	1.872***	1.474***	1.419***	1.399***	
_	[0.060]	[0.053]	[0.038]	[0.464]	[0.370]	[0.339]	[0.286]	[0.247]	[0.229]	
F-stat	4.577	12.05	43.95	18.26	26.16	30.49	26.58	32.98	37.44	
Closest countries:	2	3	4	2	3	4	2	3	4	
Route-country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Country-time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Quarter-route	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Observations	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	

Magnitude: 1 additional election implies a 0.2/0.3 std dev increase in enforcement

-1) Political Cycle in Border Enforcement?

Figure: Elections and EU presidency (First Stage)

	(1)	(2)	(3)	(4)	(5)	(6)
_	num	_FX	Inbud	get_FX	Indays_FX	
d_elect*d_ low_trustEU	0.251***	0.264***	1.872***	1.948***	1.399***	1.445***
	[0.038]	[0.035]	[0.339]	[0.329]	[0.229]	[0.226]
dist_EU_presid		-0.011***		-0.060***		-0.036***
		[0.003]		[0.009]		[0.006]
F-stat	43.95	29.80	30.49	28.06	37.44	23.86
Closest countries:	4	4	4	4	4	4
Route-country	Yes	Yes	Yes	Yes	Yes	Yes
Country-time	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-route	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,940	2,940	2,940	2,940	2,940	2,940

- Empirical Analysis and Results
 - -2) Border Enforcement and Crossings

2) Border Enforcement and Crossings

- **1** Political Cycle in Border Enforcement?
- **2** Border Enforcement and Crossings
- 3 Outsourcing Border Enforcement: Deterrence and Diversion Effects

-2) Border Enforcement and Crossings

Figure: OLS estimates

	(1)	(2)	(3)	(4)	(5)	(6)
num_FX	0.100			0.120		
	[0.078]			[0.089]		
Inbudget_FX		-0.009			-0.006	
		[0.011]			[0.014]	
Indays_FX			-0.020			-0.015
			[0.018]			[0.022]
Observations	2,940	2,940	2,940	2,940	2,940	2,940
Route-country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Country-time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-route dummies	No	No	No	Yes	Yes	Yes

Empirical Analysis and Results

-2) Border Enforcement and Crossings

	(1)	(2)	(3)	(4)	(5)	(6)
num_FX - sea routes	0.239***			0.306***		
	[0.072]			[0.063]		
num_FX - land routes	-0.048			-0.042		
	[0.139]			[0.146]		
Inbudget_FX - sea routes		0.023**			0.044***	
		[0.011]			[0.011]	
Inbudget_FX - land routes		-0.045***			-0.047***	
		[0.016]			[0.017]	
Indays_FX - sea routes			0.033*			0.066***
			[0.018]			[0.018]
Indays_FX - land routes			-0.072***			-0.075***
			[0.024]			[0.025]
Observations	2,940	2,940	2,940	2,940	2,940	2,940
Route-country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Country-time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-route dummies	No	No	No	Yes	Yes	Yes

Figure: OLS Estimates: Sea and Land Routes

Empirical Analysis and Results

-2) Border Enforcement and Crossings

	(1)	(2)	(3)	(4)
		2SLS		RF
num_FX	-0.883**			
	[0.345]			
Inbudget_FX		-0.158***		
		[0.056]		
Indays_FX			-0.266***	
			[0.090]	
IV: dist_EUpres				0.009**
				[0.003]
IV: F-stat	15.64	41.30	30.05	-
Route-country	Yes	Yes	Yes	Yes
Country-time	Yes	Yes	Yes	Yes
Quarter-route	Yes	Yes	Yes	Yes
Observations	2,940	2,940	2,940	2,940

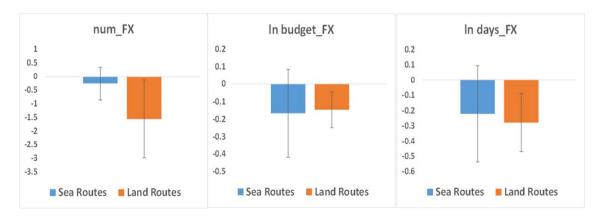
Figure: 2SLS and RF Estimates

Magnitude: 1 std dev increase in enforcement leads to a 15-20% std dev reduction in log crossings

Empirical Analysis and Results

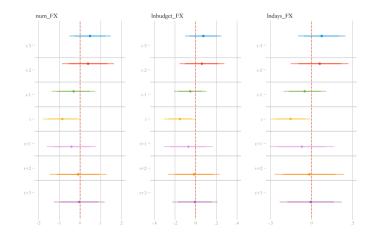
-2) Border Enforcement and Crossings

Figure: 2SLS Estimates: Sea and Land Routes



- Empirical Analysis and Results
 - -2) Border Enforcement and Crossings

Figure: IV Estimates: Timing of Effect



- Empirical Analysis and Results
 - -2) Border Enforcement and Crossings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			25	SLS			F	RF.
num_FX	-0.882**			-0.868***				
	[0.411]			[0.296]				
Inbudget_FX		-0.118**			-0.132***			
		[0.058]			[0.042]			
Indays_FX			-0.158**			-0.187***		
			[0.075]			[0.062]		
IV - elections							-0.221**	-0.233**
							[0.102]	[0.103]
IV - dist_EU_presid								0.009**
								[0.003]
IV:	elec	ct*NOtrust(N	∖= 4)	elect*NOt	rust(N=4)+di	st_EU_pres		
F-stat	43.95	30.49	37.44	29.80	28.06	23.86	-	-
Route-country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-route	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940

Figure: Table - IV Estimates: Alternative IV Strategy

- Empirical Analysis and Results
 - -2) Border Enforcement and Crossings

Robustness Checks

- Excluding peak refugee crisis years (2014-2015) or Western Balkan route
- 2 Leave-out one country 💿
- 3 Changes in the set of source countries: from top10 to top20 💿
- 4 Aggregate regressions 💿

- Empirical Analysis and Results
 - 2) Border Enforcement and Crossings

Refugees vs. Economic migrants

- Are refugees less responsive to enforcement than economic migrants?
- To explore this issue:
 - Note that throughout the empirical analysis, country-specific push (and pull) factors are absorbed by country-time dummies
 - We can introduce interaction terms with enforcement
 - We can distinguish countries of origin that have Internally Displaced People (UNHCR Data) and those that do not
 - Alternatively, we can use the Political Terror Scale of the US State Department to identify countries subject to "state terror"
 - In both cases, we have variation across and within countries of origin

- Empirical Analysis and Results
 - -2) Border Enforcement and Crossings

	(1)	(2)	(3)	(4)	(5)	(6)
	IV	IV	IV	IV	IV	IV
	nun	ו_FX	Inbud	get_FX	Inda	ys_FX
enforc	-0.843**		-0.144**		-0.245**	
	[0.360]		[0.057]		[0.092]	
enforc * (d_IDP>0)		0.707		0.316		0.444
		[0.718]		[0.246]		[0.366]
enforc * (d_IDP=0)		-2.062**		-0.445***		-0.710***
		[0.826]		[0.155]		[0.240]
Internally Displaced (y-1)	0.042**		0.042**		0.042**	
	[0.016]		[0.016]		[0.017]	
Observations	2,457	2,457	2,457	2,457	2,457	2,457
Route-country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	No	Yes	No	Yes	No
Country-time dummies	No	Yes	No	Yes	No	Yes
Quarter-route dummies	Yes	Yes	Yes	Yes	Yes	Yes

Figure: Elasticity to Enforcement: Refugees and Economic Migrants

Empirical Analysis and Results

-2) Border Enforcement and Crossings

	(1)	(2)	(3)
	IV	IV	IV
	num_FX	Inbudget_FX	Indays_FX
enforc * Terror	0.111	0.139	0.148
	[0.650]	[0.200]	[0.289]
enforc * no Terror	-1.155***	-0.217***	-0.347***
	[0.424]	[0.079]	[0.122]
Observations	2,940	2,940	2,940
Route-country dummies	Yes	Yes	Yes
Country-time dummies	Yes	Yes	Yes
Quarter-route dummies	Yes	Yes	Yes

Figure: Elasticity to Enforcement: Refugees and Economic Migrants

- Empirical Analysis and Results
 - -3) Outsourcing Border Enforcement: Deterrence and Diversion Effects

3) Outsourcing Border Enforcement

- **1** Political Cycle in Border Enforcement?
- 2 Border Enforcement and Crossings
- 3 Outsourcing Border Enforcement: Deterrence and Diversion Effects

- Empirical Analysis and Results
- -3) Outsourcing Border Enforcement: Deterrence and Diversion Effects

EU-Turkey deal

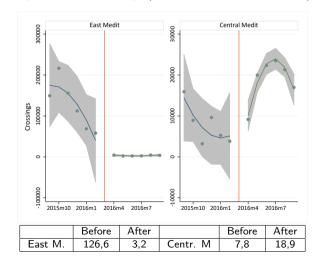
On 18 March 2016, the EU and Turkey adopted the EU-Turkey Statement, a.k.a. the EU-Turkey deal, designed with the purpose of deterring asylum seekers and other migrants from arriving to Europe.



- Deterrence: was the EU-Turkey deal effective in closing the East Mediterranean route?
- *Diversion*: did it increase crossings on the Central Mediterranean route?

- Empirical Analysis and Results
 - -3) Outsourcing Border Enforcement: Deterrence and Diversion Effects

Figure: Total Crossings (September 2015 - Sep 2016)



- Empirical Analysis and Results
 - **3)** Outsourcing Border Enforcement: Deterrence and Diversion Effects

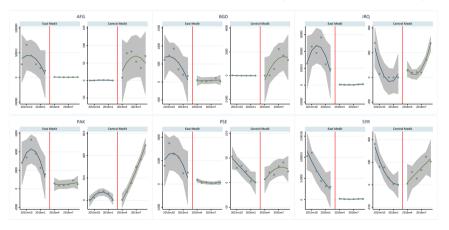
Are crossings increasing on the Central Med route because of the EU-Turkey deal, or because of other concomitant factors?

1 Sudden increase in crossings from African countries?

- \Rightarrow Exploit information on country of origin and distinguish effect on Asian and African countries
- **2** Increase due to seasonality (spring and summer season)?
 - \Rightarrow Exploit info on crossings in previous years in DID approach

- Empirical Analysis and Results
 - -3) Outsourcing Border Enforcement: Deterrence and Diversion Effects

Figure: Main Asian countries: Total Crossings (Sept. 2015 - Sept. 2016)



- Empirical Analysis and Results
 - └─3) Outsourcing Border Enforcement: Deterrence and Diversion Effects

DID approach:

$$\begin{aligned} \ln att_{ct} &= \beta_o + \beta_1 POST(Apr - Sep) + \beta_2 year 2016 + \\ &+ \beta_3 POST(Apr - Sep) \times year 2016 + \gamma_c + \varepsilon_{ct} \end{aligned}$$

- year2016: dummy for 2016 year
- POST(Apr Sep): dummy = 1 for April-September, 0 otherwise

Estimate equation separately:

- 1 for East Med and Central Med;
- **2** Asians and Africans;
- **3** over alternative pre-periods.

Empirical Analysis and Results

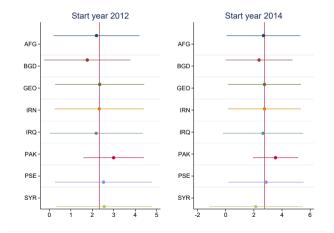
-3) Outsourcing Border Enforcement: Deterrence and Diversion Effects

Figure: DID Estimates - Aggregate Crossings

	As	sian countri	ies	African countries				
		East Mediterranean						
post	0.521			-0.038				
	[0.369]			[0.199]				
post_2016	-3.418***	-4.475***	-5.476***	-0.454*	-1.031***	-1.064***		
	[0.471]	[0.567]	[0.792]	[0.261]	[0.181]	[0.310]		
	Central Mediterranean							
post	1.330***			1.486***				
	[0.314]			[0.374]				
post_2016	2.509**	2.070**	2.161*	-0.429	-1.239*	-0.746		
	[1.066]	[0.755]	[1.028]	[0.463]	[0.626]	[0.419]		
Observations	48	48	24	48	48	24		
Year FE	YES	YES	YES	YES	YES	YES		
Month FE	NO	YES	YES	NO	YES	YES		
Start year	2012	2012	2014	2012	2012	2014		

- Empirical Analysis and Results
 - -3) Outsourcing Border Enforcement: Deterrence and Diversion Effects

Figure: DID coeff. on Central Med - Asian Countries: leave out one country



Conclusions

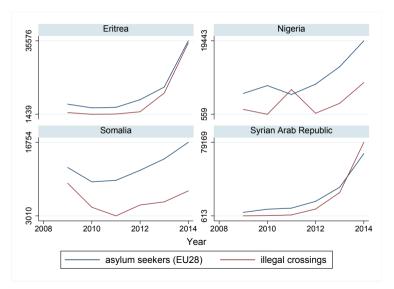
- We analyze data on illegal border crossings at the external EU borders between 2009 and 2015
- We deal with the endogeneity of enforcement with two alternative instrumental variable strategies based on the political economy of enforcement policy in the EU
- We find that higher enforcement on one route reduces crossings on the same route and possibly diverts crossings towards other routes
- The effect is present only on land routes. Results on sea routes are not conclusive though we can rule out pull effects
- We find a sizeable diversion effect of closing one route (after the 2016 EU-Turkey deal)

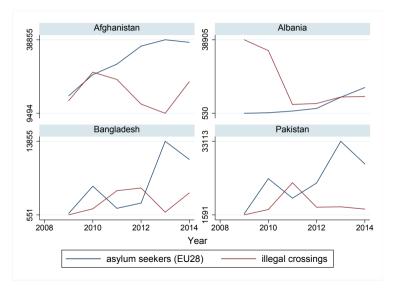
- Appendix

Appendix

- Appendix

	1	Table 3:	Illegal crossings:	top 5 national	ities b	y route		
Centr	al Medit		Cin	cular		Easter	n borders	
Country of origin	Illegal crossings	Share	Country of origin	Illegal crossings	Share	Country of origin	Rlegal crossings	Share
Eritrea	86,435	0.21	Albania	107,111	0.95	Moldova	1,459	0.15
Syrian Arab Republic	59,697	0.14	Afghanistan	1,782	0.02	Georgia	1,382	0.15
Nigeria	41,154	0.10	Iraq	1,151	0.01	Afghanistan	1,286	0.14
Tunisia	35,911	0.09	Palestine	817	0.01	Vietnam	1,123	0.12
Somalia	30,773	0.07	Somalia	303	0.00	Russian Federation	770	0.08
Share of total		0.60			0.99			0.63
East M	edit - land		East M	ledit - sea		West	A frican	
Country of origin	Illegal crossings	Share	Country of origin	Illegal crossings	Share	Country of origin	Illegal crossings	Share
Afghanistan	53,600	0.30	Syrian Arab Republic	522,771	0.54	Morocco	978	0.23
Syrian Arab Republic	27,626	0.15	Afghanistan	243,006	0.25	Guinea	737	0.17
Pakistan	21,032	0.12	Iraq	91,504	0.09	Mali	655	0.15
Algeria	12,785	0.07	Pakistan	24,931	0.03	Cote d'Ivoire	432	0.10
Iraq	10,865	0.06	Iran, Islamic Rep.	23,494	0.02	Gambia, The	292	0.07
Share of total		0.70			0.93			0.73
West M	edit - land		West M	ledit - sea		Wester	rn Balkan	
Country of origin	Illegal crossings	Share	Country of origin	Illegal crossings	Share	Country of origin	Illegal crossings	Share
Algeria	3,689	0.43	Algeria	8,841	0.30	Syrian Arab Republic	381,810	0.45
Morocco	1,041	0.12	Morocco	3,056	0.11	Afghanistan	221,900	0.26
Cameroon	863	0.10	Guinea	2,661	0.09	Pakistan	75,215	0.09
Mali	728	0.08	Cameroon	2,418	0.08	Kosovo	57,328	0.07
Syrian Arab Republic	405	0.05	Cote d'Ivoire	1,504	0.05	Iraq	27,715	0.03
Share of total		0.78			0.64			0.91





Theoretical Framework

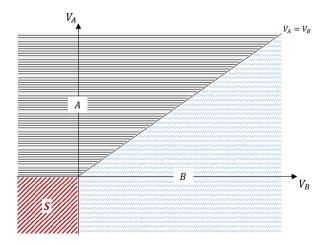
- RUM (random utility model) of migration decisions with multiple source countries (c), one destination country (EU) and multiple routes of entry (r)
- Linear form of cost C_{crt} of migrating through route r from country c in time t:

$$C_{crt} = \beta_1 e_{rt} + \beta_2 h_r + \beta_3 d_{cr}$$

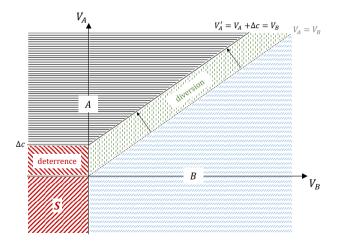
- e_{rt} : enforcement on route r in time t;
- h_r : measure of route dangerousness;
- d_{cr} : distance between the source country c and the route r.
- Migrate if value from migration $V_{icrt} > 0$ for at least one route:

$$V_{icrt} = U_{ct}^{EU} - C_{crt} + u_{icrt}$$

Suppose there are two routes, A and B



If enforcement on A increases to $e'_A > e_A$, then $\Delta C_A > 0$:



- Theoretical Framework

Further, assume:

$$u_{icrt} = \theta_{rt} + \varepsilon_{icrt}$$

where:

- θ_{rt} : unobservable route-time shock
- ε_{icrt} : idiosyncratic component; i.i.d. (i.i.d.) type I extreme value

The share of immigrants from country c choosing route r in time t is (multinomial logit):

$$sh_{crt} = \frac{exp(U_{ct}^{EU} - (\beta_1 e_{rt} + \beta_2 h_r + \beta_3 d_{cr}) + \theta_{rt})}{\sum_r exp(U_{ct}^{EU} - (\beta_1 e_{rt} + \beta_2 h_r + \beta_3 d_{cr}) + \theta_{rt})}$$

Finally, assume observed shares SH_{crt} are equal to the population shares plus a multiplicative error term. Taking logs:

$$lnSH_{crt} = U_{ct}^{EU} - (\beta_1 e_{rt} + \beta_2 h_r + \beta_3 d_{cr}) + \theta_{rt} - lnA_{ct} + \nu_{crt}$$

where A_{ct} : denominator of sh_{crt} .

Estimating equation:

$$InSH_{crt} = \beta_1 e_{rt} + \mu_{ct} + \tau_r + \rho_{cr} + \theta_{rt} + \nu_{crt}$$

- Non route-time variation absorbed by fixed effects
- However, θ_{rt} may be correlated with the level of enforcement e_{rt} more on this later

Back to presentation

- Theoretical Framework
 - Measurement Issues: Detection Effect

Measurement Issues: Detection Effect

- What do we learn about underlying attempts by studying detected attempts?
- The number of detected attempts along route *r* in year *t* is:

$$att_{rt}^{D} = p_{rt}^{D} * att_{rt} = p_{rt}^{D} * p_{t}^{r} * att_{t}$$

 p_{rt}^D : detection probability on route r; att_{rt} attempts on route r; p_t^r : share of attempts choosing route r; att_t : total number of attempts.

Measurement Issues: Detection Effect

• The elasticity of detected attempts along route *r* to enforcement along the same route:

$$\frac{\partial \ln att_{rt}^{D}}{\partial \ln enf_{rt}} = \frac{\partial \ln p_{rt}^{D}}{\partial \ln enf_{rt}} + \frac{\partial \ln p_{t}^{r}}{\partial \ln enf_{rt}} + \frac{\partial \ln att_{t}}{\partial \ln enf_{rt}}$$
$$= \text{detection} \ (\geq 0) + \text{diversion} (\leq 0) + \text{deterrence} (\leq 0)$$

- Theoretical Framework

Appendix Tables

EU Presidency

Year	Semester	Country
2009	Jan–Jun	Czech Republic
2009	Jul–Dec	Sweden
2010	Jan–Jun	Spain
2010	Jul–Dec	Belgium
2011	Jan–Jun	Hungary
2011	Jul–Dec	Poland
2012	Jan–Jun	Denmark
2012	Jul–Dec	Cyprus
2013	Jan–Jun	Ireland
2013	Jul–Dec	Lithuania
2014	Jan–Jun	Greece
2014	Jul–Dec	Italy
2015	Jan–Jun	Latvia
2015	Jul–Dec	Luxembourg
2016	Jan–Jun	Netherlands
2016	Jul–Dec	Slovakia
2017	Jan–Jun	Malta
2017	Jul–Dec	Estonia

- Theoretical Framework

Appendix Tables

Routes: closest destination countries

	Route						
Ranking	Central Medit	Eastern borders	East Medit	West African	West Medit	Western Balkan	
1	Malta	Lithuania	Cyprus	Portugal	Portugal	Bulgaria	
2	Italy	Romania	Romania	Spain	Spain	Greece	
3	Greece	Latvia	Greece	Malta	France	Romania	
4	Croatia	Poland	Bulgaria	France	United Kingdom	Hungary	
5	Slovenia	Bulgaria	Hungary	Ireland	Ireland	Croatia	

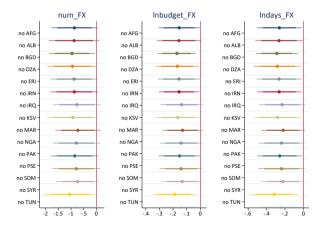
Appendix Tables

	(1)	(2)	(3)	(4)	(5)	(6)	
	2009-2013			No Western Balkan			
num_FX	-0.813*			-0.637*			
	[0.457]			[0.316]			
Inbudget_FX		-0.089*			-0.153*		
		[0.045]			[0.076]		
Indays_FX			-0.152**			-0.242**	
			[0.075]			[0.116]	
IV: F-stat	21.25	19.50	15.49	27.67	88.56	73.74	
Route-country	Yes	Yes	Yes	Yes	Yes	Yes	
Country-time	Yes	Yes	Yes	Yes	Yes	Yes	
Quarter-route	Yes	Yes	Yes	Yes	Yes	Yes	
Observations	2,100	2,100	2,100	2,520	2,520	2,520	

Figure: 2SLS Estimates: Robustness Checks

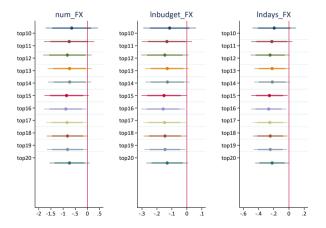
Appendix Tables

Figure: IV Estimates: Leave-Out one Country



Appendix Tables

Figure: IV Estimates: Changing Set of Top Countries (top10-top20)



Pack to procentation

- Theoretical Framework

Appendix Tables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		OLS			2SLS		RF
num_FX	0.106			-1.821			
	[0.200]			[1.101]			
Inbudget_FX		-0.005			-0.325**		
		[0.030]			[0.121]		
Indays_FX			-0.017			-0.549**	
			[0.049]			[0.201]	
IV: dist_EUpres							0.018*
							[0.009]
Observations	196	196	196	196	196	196	196
p-values:							
cluster(route)	[0.613]	[0.863]	[0.742]	[0.149]	[0.037]	[0.034]	[0.077]
bootstrap (999 reps)	0.634	0.889	0.827				0.044
bootstrap (9999 reps)	0.634	0.908	0.806				0.043
					FS		
FS: dist_EUpres				-0.010	-0.056**	-0.033*	
				[0.006]	[0.022]	[0.015]	
p-values:							
cluster(route)				[0.164]	[0.042]	[0.070]	
bootstrap (999 reps)				0.117	0.0315	0.0593	
bootstrap (9999 reps)				0.117	0.0290	0.0611	
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Route-Season FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Figure: IV Estimates: Aggregate Regressions

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