Securing European Borders? Enforcement, Politics and Externalization

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Abstract

This paper provides the first comprehensive evaluation of EU border policies' impact on migrant entry attempts, exploring administrative records on unauthorized border crossings combined with an original dataset on EU operations at land and sea routes. We proceed in four steps. First, we document a political cycle in EU enforcement investment, showing that control effort increases on routes that are geographically closer to EU Member States holding the rotating EU Council Presidency or having incoming elections, particularly in eurosceptic countries. Second, we develop an instrumental variable strategy leveraging this politically-driven exogenous variation in enforcement choices, and identify the causal impact of border operations on migration flows. Our results indicate that, while stricter enforcement reduces crossings along targeted routes, the effect is economically modest and primarily confined to land routes and migrants from non-refugee-sending countries. Third, we fail to detect a significant deterrence effect on overall migration, implying that route-specific enforcement primarily diverts flows across alternative routes. Fourth, we examine border enforcement externalization and show that the 2016 EU-Turkey deal significantly reduced crossings via the Eastern Mediterranean, but diverted flows toward the Central Mediterranean Route. Our findings offer a cautionary tale about the effectiveness of EU border policies in deterring unauthorized inflows, suggesting that conflicting national interests and route diversion may contribute to undermining their efficacy.

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1 Introduction

The emphasis on securing and regaining control over national borders is pervasive in the current political discourse in both Europe and the United States. Speaking from Sicily – a region notoriously exposed to unauthorised migrant arrivals from Northern Africa – Ursula von der Leyen, President of the European Commission, announced in September 2023 her vision for migration management in the European Union (EU): "*We have an obligation as part of the international community. (...) But we will decide who comes to the European Union and under what circumstances, and not the smugglers and traffickers.*" (17 September 2023).[1] Indeed, the EU's current approach to migration and asylum policy heavily prioritises border controls and the externalisation of enforcement to transit and source countries. This vision is embedded in the *Pact on Migration and Asylum* – a comprehensive legislative framework aimed at managing migration and establishing a common asylum system at the EU level, which will come into force in June 2026 – whose first pillar is titled "*Securing External Borders*".[2] Similarly, in the U.S., there seems to be broad consensus on the urgency of enhancing security along external borders (Pew Research Center, 2024), and "*Securing our Borders*" is one of the many executive orders signed by U.S. President Donald Trump on his first day in office after re-election.

Despite attracting huge political attention and absorbing considerable public resources, border enforcement remains an area of public policy that has undergone relatively limited causal evaluation, and the available evidence almost exclusively focuses on the U.S.-Mexico setting (see surveys by Hanson, 2006, and Orrenius, 2014). A rigorous analysis of border policies' effectiveness poses significant empirical challenges. Measurement issues are particularly prominent: not only are reliable indicators of enforcement investment often scarce, but the underlying unauthorised migrant flows are, by definition, unobservable. Furthermore, the endogenous response of enforcement to expected migrant pressure at the borders complicates the estimation of causal effects.

This paper provides the first systematic evaluation of border enforcement policies in Europe over the period 2009-2016, assessing their impact on unauthorised migrant crossings and presenting novel evidence on the political economy determinants of EU border control decisions. Our analysis is based

[1] See: `https://ec.europa.eu/commission/presscorner/detail/en/statement_23_4502` (last accessed: 27/02/2025).

[2] Notably, the narrative on taking back control of borders has also been a central argument for *leaving* the EU, as clearly expressed by former UK Prime Minister Theresa May: *"First, the agreement we reach with the EU must respect the referendum. It was a vote to take control of our borders, laws and money."* (2nd March 2018). See: `https://www.bbc.com/news/uk-politics-43256183` (last accessed: 27/02/2025).

on administrative records on irregular migration attempts by month, country of origin, and route of entry in Europe, matched with an original dataset that we collected on all EU border enforcement operations implemented on each route of entry in Europe over this period. We proceed in four steps. First, we document the existence of a political cycle in enforcement investment at the external EU borders, which is orthogonal to expected flows. Specifically, we show that the rotating EU Council Presidency leads to temporary increases in enforcement along routes geographically closer to the states holding the Presidency. A similar effect is observed in countries with approaching national elections, particularly when eurosceptic sentiments among voters are strong. These effects are economically sizeable and demonstrate that EU border enforcement strategies are significantly influenced by conflicting interests among its Member States. Second, we exploit these exogenous sources of variation to develop alternative instrumental variable strategies to address the endogeneity of border enforcement along different entry routes in the EU and identify its causal effect on unauthorised migrant crossings. Our results indicate that stricter surveillance along a given route reduces border crossing attempts through that route. However, this estimated elasticity is relatively modest, and is limited to land routes and to migrants arriving from non-refugee-sending countries. Third, we assess whether border operations deter overall unauthorised migration into the EU across all entry routes. We fail to detect a significant deterrence effect, suggesting that the negative elasticities we estimate on route-specific border enforcement are primarily attributable to flows diversion across alternative routes. Finally, we examine the short-term effects of the EU-Turkey deal, signed in March 2016 to halt the flow of refugees entering the EU through the Turkish territory (i.e. via the Eastern Mediterranean route). Our estimates show that this externalisation strategy significantly reduced crossings on the targeted route, but they also reveal a non-negligible diversion effect towards the closest alternative, namely, the Central Mediterranean Route.

Understanding the EU response to migrant and refugee flows is a key priority for a continent expected to face substantial migratory pressure over the next decades (Hanson and McIntosh, 2016). Despite this urgency, the evidence on border enforcement policies in the European context is still scattered and focused on some very specific aspects. Aksoy and Poutvaara (2021) study the self-selection of migrants and refugees intending to move to Europe, showing that enforcement changes in European countries – among other factors – affect planned migration responses. In addition, four studies have explored different aspects of migratory movements through the Central Mediterranean

Route. Friebel et al. (2024) show that the fall of Gaddafi's regime in 2011 in Libya resulted in an immediate expansion of the smuggling network and a substantial surge in crossings towards Italy. Battiston (2020) highlights the trade-off faced by governments between deterring irregular migration and granting humane treatment to sea-crossing migrants, and how this balance shifts with changes in public attention. Deiana et al. (2024) suggest that smugglers took advantage of the search and rescue (SAR) operations in the Central Mediterranean sea by switching to cheaper and less safe sailing technology. Finally, Zambiasi and Albarosa (2024) detect a higher risk of deadly incidents for boats crossing sea sections patrolled by the so-called "Libyan Coast Guard". A more extensive body of evidence has evaluated the effects of policies implemented along the U.S.-Mexico border, although the findings from this literature remain mixed. Early studies (e.g. Donato et al., 1992; Kossoudji, 1992; Massey and Singer, 1995; Hanson and Spilimbergo, 1999) point to a small *deterrence effect* of border controls. More recently, Angelucci (2012) and Massey et al. (2016) suggest that border enforcement may deter both inflows and outflows of unauthorised immigrants, leading to an ambiguous effect on the stock of undocumented immigrants in the U.S. Additionally, Bohn and Pugatch (2015) estimate sizeable deterrence effects, while Bazzi et al. (2021) show that harsher penalties for immigrants apprehended at the border lead to a sizeable decline in illegal entry recidivism. Migrants can also adopt alternative behavioural responses to increased border patrolling, investing more in border crossing technology (e.g. paying for better smugglers) and selecting routes where patrolling is less intense (Gathmann, 2008; Bohn and Pugatch, 2015). This latter *diversion effect* is also detected by Allen et al. (2024) and Feigenberg (2020) in response to the border wall expansion between Mexico and the U.S., although the two papers reach different conclusions on the overall deterrence effect.

We contribute to the literature on border enforcement in several innovative ways. First, our paper develops the first systematic evaluation of EU enforcement policies at land and sea borders and provides causal estimates of their effects of unauthorised migrant crossings in Europe. The European border management setting and the EU's decision-making process are profoundly different from, and arguably more intricate than, the American ones. Unlike a federal state like the U.S. dealing with a single border with a primary source country such as Mexico, the EU comprises 27 independent countries, each with distinct governments, electoral cycles, policies and priorities. EU Member States face unauthorised inflows from a multitude of source countries and through different entry routes, making geography a crucial determinant of national exposure to migrant and refugee arrivals.

Second, we highlight the political economy determinants of border management in the EU setting, which we leverage to develop an original identification strategy of enforcement impact. Notably, the European Union is characterised by a persistent tension between the trend towards increased policy harmonisation and the continued presence of divergent national interests and preferences (Alesina, Angeloni and Etro, 2005; Alesina, Angeloni and Schuknecht, 2005). As regards border management, EU countries have lifted internal barriers to mobility for EU citizens, but have achieved only partial co-ordination in migration policy for non-EU nationals. Each Member State still independently manages its own border enforcement, as well as its migration and asylum policy. Since the first country of entry bears the financial – and political – responsibility for asylum seekers and undocumented migrants, this fragmented system fosters conflicting national interests. While some papers have documented the influence of national interests on other EU policy areas, (Aksoy, 2010; Carnegie and Marinov, 2017; Gehring and Schneider, 2018), our empirical analysis reveals that national interests also significantly shape EU external border controls.

Third, we extend the existing literature by providing a first quantitative assessment of the effects of the externalisation of border enforcement. Especially after the 2015 European refugee crisis, the fear of future massive inflows has shifted the EU's approach toward greater investment in externalising controls to non-EU countries. Beyond the 2016 EU-Turkey deal, the EU or its Member Countries have signed in the following years agreements with countries such as Libya, Tunisia, Albania, among others. In general, externalisation is a border control strategy that has gained popularity in most destination countries (Stock et al., 2019). Prominent examples are Australia's *Pacific Solution* policy of transporting asylum seekers to detention centres on island nations in the Pacific Ocean, the recent UK-Rwanda plan, the deals struck by the US government with several Latin American countries.

The structure of the paper is as follows. In Section 2, we provide background information on border enforcement policies in Europe. Section 3 develops a model of migration decision with multiple route choice, from which we derive our main estimating equation. Section 4 illustrates our empirical approach, describes data sources, and discusses our identification strategy. Section 5 presents OLS, FS and 2SLS estimates of our main analysis on route-level crossings and enforcement. Section 6 first quantifies the overall deterrence effects of EU border enforcement on aggregate migrant inflows, and then assesses the effects of the EU-Turkey deal on crossings. Finally, Section 7 concludes the paper.

2 Institutional Setting: Border Enforcement in the EU

External Borders, Schengen Agreement and Frontex. Over the last few decades, European countries have gradually established the Schengen area, one of the world's largest areas that have ended border controls between member countries.[3] The elimination of internal border checks has heightened the political importance of external border controls. While managing national border controls remains the sole responsibility of individual Member States, oversight of the Schengen Area's external borders is coordinated by Frontex, the European Border and Coast Guard Agency (Kalkman, 2021). Established in 2004, Frontex organizes the deployment of additional personnel, experts, and equipment along the external EU border through *joint operations* in collaboration with Member States' border and coast guards. These operations rely on contributions from EU Member States in the form of staff, transportation, and financial resources, while Frontex plays a primarily coordinating and organisational role. Frontex *joint operations* are planned and developed on the basis of its Annual Risk Analysis Reports, which evaluates potential risks of unauthorised migration along the EU external borders and identifies regions expected to experience significant pressure. Funded through the EU budget, Frontex annual budget increased by 140 times since its inception, from approximately €6 million in 2004 to over €845 million in 2023. Over period we consider (2009-2016), its budget nearly tripled, rising from €88 million to €254 million, with the vast majority (about 70%) allocated to *joint operations*.

The Political Economy of EU Border Enforcement. The EU is an international organisation that aims to pursue common goals while preserving very distinct national identities of its Member States. As a result, the tension between implementing common policy actions and accommodating diverging national interests is a distinctive feature of the EU governance. Indeed, the EU faces a fundamental trade-off between the benefits of centralisation – stemming from economies of scale or externalities – and the costs of harmonisation due to heterogeneity in member preferences (Alesina, Angeloni and Etro, 2005). This trade-off is particularly evident in areas such as migration policy, where integration remains limited (Alesina, Angeloni and Schuknecht, 2005). The political economy

[3]Initially signed by just five countries (France, Germany, Belgium, Luxembourg, and the Netherlands) in 1985, the Schengen Agreement has currently reached a total of 26 members. There is only partial overlap between EU membership and Schengen Area membership: four EU27 countries (Bulgaria, Cyprus, Ireland and Romania) are outside the Schengen Area while four non-EU countries (Iceland, Liechtenstein, Norway and Switzerland) are part of it; the UK has never been a Schengen member.

of border enforcement at the external EU borders reveals a latent conflict of interests. For the EU as a whole, the overarching goal of border enforcement is to reduce unauthorised immigration into its whole territory. Achieving this efficiently would ideally entail allocating resources to specific routes and time periods where they yield the highest deterrence returns. However, individual Member States will inevitably tend to focus on securing their national borders, prioritizing routes geographically proximate to their territories. This localized perspective reflects their accountability to domestic voters and is reinforced by the fact that each member country is individually responsible for the financial costs of supporting asylum seekers who first enter their territories when arriving in Europe (under the so-called Dublin regulation; see Dustmann et al. (2017)), as well as of managing undocumented immigrants detected within their national borders. Consequently, national governments may view policies that divert migration flows to other EU countries as equally favourable to outright deterrence, so long as these policies reduce unauthorised entries into their own territories. From a supranational EU perspective, however, the diversion of flows between Member States represents an inefficient and undesirable outcome. This divergence between EU and national targets underscores the need to account for national interests in the EU policy-making process.

Externalisation of Border Enforcement During the so-called "European refugee crisis", the EU intensified efforts to strengthen external border controls while expanding collaboration with transit countries. Although the externalisation of border enforcement to third countries was not an entirely novel approach for the EU (Friebel et al., 2024), a major turning point occurred on 18 March 2016 with the adoption of the EU-Turkey Statement. Following months of intense migratory pressure along the Eastern Mediterranean route, this agreement required the Turkish government to tighten their border controls and host Syrian refugees in the Turkish territory, while the EU would fund the financial costs of these interventions (see Section 6.2 for a detailed discussion). The EU initially committed to a transfer of €6 billion – approximately 4% of the EU budget in 2016 (€155 billion) – over four years. However, recent estimates indicate that total transfers to Turkey have reached €11.5 billion (European Court of Auditors, 2024).

3 Theory: Migrating to the EU and Route Choice

In this Section, we model the choice of a migrant who intends to reach the EU illegally and can choose across multiple routes of entry.[4] We use a standard random utility model (RUM) of migration to describe the utility that individual i from country s derives from migrating to the EU in time t through route r:

$$V_{isrt} = U_{st}^{EU} - C_{srt} + u_{isrt} \tag{1}$$

where: U_{st}^{EU} is a deterministic component that captures the utility gain implied by moving from source country s to the EU in time t, C_{srt} captures the cost of reaching the EU through route r and u_{isrt} is an individual-specific error term. Note that the utility from migrating into the European Union U_{st}^{EU} is time-varying and source country-specific. This term captures any time variant pull factor in the EU – such as changes in economic conditions and in the generosity of their asylum policies – which can differentially affect distinct national groups of immigrants (for instance, because they can rely on networks of different size and quality, or because they face different refugee status recognition rates). In addition, this term absorbs changes in source country push factors (economic conditions, conflicts, etc.) since the utility of migrating to the EU is relative to the utility individuals would derive from remaining in their home country.

We then assume that the cost C_{srt} takes the following linear form:

$$C_{srt} = \beta_1 e_{rt} + \beta_2 h_{rq} + \beta_3 d_{sr} \tag{2}$$

where e_{rt} is a measure of enforcement on route r in time t, h_{rq} is a measure of route riskiness which is route r and season q specific,[5] and d_{sr} is the distance between the source country s and the route r. Insofar as higher enforcement, hazard, and distance increase the cost of migrating through route r, we expect all three β coefficients to be positive. Further, we assume that the error term in equation (1) can be decomposed into a route and time-specific component θ_{rt} and an idiosyncratic component ε_{isrt}: $u_{isrt} = \theta_{rt} + \varepsilon_{isrt}$. We assume the last term to be independent and identically distributed (i.i.d.) type I extreme value and obtain a multinomial logit model (McFadden, 1973). We can then write the

[4] Our model builds on the theoretical framework presented in their online appendix by Bohn and Pugatch (2015) and adapts it to the EU setting.

[5] This term captures seasonal variability in route hazard, e.g. the fact that the risk of death is systematically higher along sea routes than land routes and it is higher in winter along all routes.

share of immigrants sh_{srt} from country s choosing route r in time t as:

$$sh_{srt} = \frac{exp(U_{st}^{EU} - (\beta_1 e_{rt} + \beta_2 h_{rq} + \beta_3 d_{sr}) + \theta_{rt})}{\sum_r exp(U_{st}^{EU} - (\beta_1 e_{rt} + \beta_2 h_{rq} + \beta_3 d_{sr}) + \theta_{rt})} \tag{3}$$

Assuming that the sample shares SH_{srt} are proportional the population shares sh_{srt} through a multiplicative error term κ_{srt} ($SH_{srt} = sh_{srt} \times \kappa_{srt}$) and taking logs, we can write:

$$\ln SH_{srt} = U_{st}^{EU} - (\beta_1 e_{rt} + \beta_2 h_{rq} + \beta_3 d_{sr}) + \theta_{rt} - lnA_{st} + \nu_{srt} \tag{4}$$

where $A_{st} = \sum_r exp(U_{st}^{EU} - (\beta_1 e_{rt} + \beta_2 h_r + \beta_3 d_{sr}) + \theta_{rt})$ and $\nu_{srt} = ln\kappa_{srt}$. Finally, note that in the equation above the terms that vary at the country-time level can be captured by country-time fixed effects ($\mu_{st} = U_{st}^{EU} - lnA_{st}$), the seasonal riskiness of the route can be captured by route-season fixed effects τ_{rq} and the distance from each source country to each route d_{sr} by route-country fixed effects ρ_{sr}. We can thus rewrite equation (4) as:

$$\ln SH_{srt} = \beta_1 e_{rt} + \mu_{st} + \tau_{rq} + \rho_{sr} + \theta_{rt} + \nu_{srt} \tag{5}$$

Finally, since $SH_{srt} = mig_{srt}/mig_{st}$ – where mig_{srt} is the number of migrants from country s choosing route r in period t and mig_{st} the total number of migrants from country s in period t – we can rewrite equation (5) as:

$$\ln mig_{srt} = \beta_1 e_{rt} + \zeta_{st} + \tau_{rq} + \rho_{sr} + \theta_{rt} + \nu_{srt} \tag{6}$$

where $\zeta_{st} = \mu_{st} + \ln mig_{st}$.

4 Empirical Strategy, Data and Identification Issues

4.1 Estimating Equation

Our empirical specification is directly derived from the model of entry route choice discussed in the previous Section, by adding an error term and re-parametrizing equation (6). Hence, our main estimating equation is:

$$\ln mig_{srt} = \delta_0 + \delta_1 enf_{rt} + (\gamma_r \times season_t) + (\varphi_s \times \tau_t) + (\gamma_r \times \varphi_s) + \varepsilon_{rst} \tag{7}$$

where: mig_{srt} is the number of migration attempts on route r of immigrants from source country s in quarter t and enf_{rt} is a measure of border enforcement along route r in quarter t; the interaction between route and trimester dummies $(\gamma_r \times season_t)$ capture route–specific seasonality in crossings; the interaction between source country and time dummies $(\varphi_s \times \tau_t)$ absorb any country–specific and time-variant push factor; a full set of origin country–route dyadic fixed effects $(\gamma_r \times \varphi_s)$ account for all time-invariant factors, such as geographical distance, that make route r more or less attractive for migrants from source country s.

Our coefficient of interest is δ_1, which measures the effect of border enforcement on crossings. If a higher intensity of enforcement operations on one route discourages immigrants from attempting to irregularly enter Europe through that route, we would expect to estimate a negative δ_1. However, an obvious concern in estimating the coefficient δ_1 with OLS is that unobservable route-time shocks (captured by the parameter θ_{rt} in equation (6) above) may be correlated with the level of enforcement e_{rt}. In particular, we can expect enforcement on a given route to be tightened in response to shocks that may increase the share of immigrants choosing that route. This would generate an upward bias in our estimate of the δ_1 coefficient. We discuss how our proposed instrumental variable strategy would deal with this identification issue in Section 4.3. A second empirical issue is related to measurement, since we observe *detected* rather than *actual* crossings: we discuss the implication of this measurement issue for our estimates in Section 4.4.

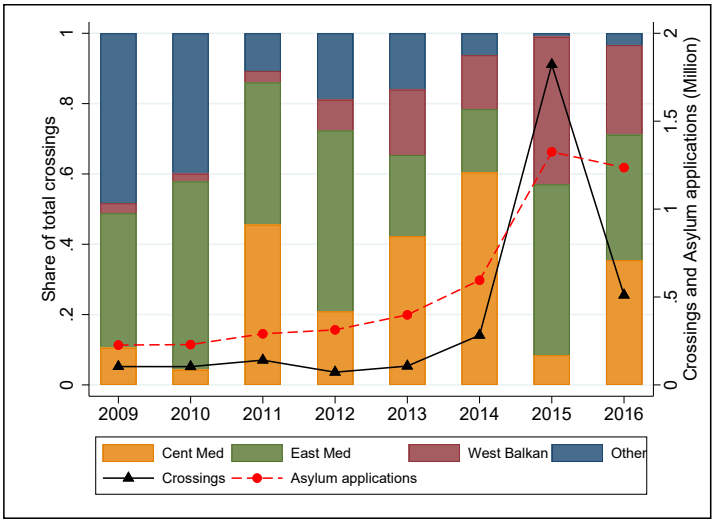
4.2 Data

To estimate equation (7), we need measures of migrant attempts to cross the external EU borders and of EU border enforcement intensity. For the former, we use official Frontex records (section 4.2.1), and for the latter, comprehensive data on Frontex operations (section 4.2.2). Additional data sources are detailed in the Online Appendix B.1.

4.2.1 Illegal Border Crossings

Monthly data on illegal border crossings (hereafter, IBCs) by entry route and country of origin have been released by Frontex since January 2009. IBCs are defined as "*the number of third-country nationals detected by Member State authorities when entering or attempting to enter illegally the territory between border crossing points at external borders*".[6] IBCs effectively measure migratory pressure at the borders, which is a policy-relevant variable for both enforcement agencies and receiving countries.[7] Note, however, that IBCs capture detected attempts and not overall attempts, a measurement issue that we discuss in Section (4.4). Frontex records IBCs along the following nine entry routes in the EU: Central Mediterranean, Circular (Albania to Greece), Eastern Borders, Eastern Mediterranean (sea and land), Western African, Western Mediterranean (sea and land), and Western Balkan. See Online Appendix B.1.1 for detailed route descriptions and Appendix Figure B.1 for a graphical representation.

Figure 1: **Illegal Border Crossings and Main Entry Routes (2009-2016)**



Note: Authors' elaboration on Frontex and EUROSTAT data.

Over the period we study (2009-2016), Figure 1 shows that Frontex detected over 3.1 million

[6] ADD REFERENCE TO Savatic et al. (2025).

[7] Note that IBCs count attempts and not individuals. The recorded number of illegal crossings may differ from the underlying flow of undocumented immigrants for at least two reasons. First, since not all illegal attempts to cross the borders are detected by the police, observed crossings are a lower bound of actual crossings. Second, multiple entry attempts by the same migrant (at the same entry point or different ones) are repeatedly counted, potentially leading to an overestimation of the number of individuals attempting to cross the border illegally. There exists no reliable and systematic data that would allow us to quantify precisely to which extent illegal crossings differ from underlying unauthorised flows. Figure 1 shows very similar trends in crossings (solid black line) and asylum applications (dashed red line) received by EU countries over the period 2009-2016.

crossing attempts in total, with a peak of 1.8 million recorded in 2015 alone - at the height of the refugee crisis - and a sharp decline to 510 thousand in the following year. Over the same period of time, EU countries received over 4.6 million asylum applications. Figure 1 also reports the share of IBCs on the Central Mediterranean (orange bars), East Mediterranean sea and land (green bars), Western Balkan (red bars), and all other routes (blue bars). In most years, these routes account for more than 80% of the total crossings, although there are large yearly fluctuations in the relative importance of each route. Yearly records on IBCs by route of entry between 2009 and 2016 are reported in Appendix Figure A.1.

4.2.2 Border Enforcement Operations

In order to obtain an accurate and consistent measure of border enforcement at the external EU borders, we gathered from the Frontex website information on the duration, route, and allocated budget of each operation implemented by Frontex between January 2009 and December 2015. We use these records to construct three alternative indicators of EU border control efforts along each route r and in each quarter q: (i) the total budget spent by Frontex ($budget_FXop_{rt}$); (ii) the total number of days of active operations ($days_FXop_{rt}$); (iii) the number of active operations (N_FXop_{rt}). For each measure, we sum over operations if multiple operations are active on the same route at the same time.[8] As Appendix Figure A.2 shows, all three measures of border enforcement intensity exhibit substantial variation over time and across the seven main entry routes to Europe (Central Mediterranean, Eastern Borders, Eastern Mediterranean Sea, East Mediterranean Sea, Western African, Western Mediterranean Sea, and Western Balkan; see Online Appendix B.1.1). Between 2009-2015, Frontex did not intervene on two minor routes, the Circular Route (from Albania to Greece) and the Western Mediterranean Land route, which are therefore excluded from our empirical analysis.

4.2.3 Estimation Sample and Descriptive Statistics

In our main empirical analysis, we focus on the period 2009-2015, for which we have data on both illegal crossings and Frontex enforcement operations. We aggregate monthly records on IBCs into quarterly data, since operations do not vary at a high frequency and to allow enough time for migrants' choices

[8]Note that these measures exclusively refer to border enforcement implemented and coordinated by Frontex: we will discuss in the empirical analysis how we can control for the national enforcement of individual EU Member States (see Online Appendix Sections B.1.2 and B.3.1). We were unable to obtain systematic information on Frontex operations after 2015.

to react to enforcement shifts. Monthly data on crossings up to year 2016 are used in Section 6.2, when investigating the effects of the EU-Turkey deal. In our baseline estimates, we restrict the sample to the top 15 source countries of the illegal crossing observed in the period 2009-2015 - which account for 92% of the IBCs over this period - while testing the robustness of our results to several alternative choices of the country set. As Appendix Table A.1 shows, Syrian citizens are the largest national group: there are over 870 thousand detected crossings by Syrian citizens, accounting for 34% of total attempts. Afghanistan is the second largest country of origin, with almost 600 thousand crossing attempts, 23% of the total. The next three countries, Iraq, Pakistan, and Albania, with more than 100 thousand crossings each, and Eritrea, which falls just short of 100 thousand, account together for almost 20% of all IBCs. The remaining nine countries - Kosovo, Somalia, Nigeria, Bangladesh, Tunisia, Palestine, Algeria, Iran, Morocco - each account for 1-2% of the crossings. As discussed in Section 5.5, these 15 main countries of origin include both nations experiencing violence and conflict as well as relatively more stable ones. Our main estimation sample includes 2,940 observations: quarterly records for the seven years 2009–2015 on illegal crossings for each of the top 15 countries of origin. Over this period, there were, on average, 760 crossings per route in each quarter, but with substantial variation across quarters, routes, and origins: the standard deviation of quarterly border crossings is 8,294, as we show in Table 1. The Table also shows that in every route and quarter, Frontex spent on average €1.63 million (standard deviation 2.27) in border enforcement operations. This amount led to, on average, 74 days of active operations (standard deviation 67.54) and 1.1 (standard deviation 0.86) active operations on each route and quarter.[9]

Table 1: **Summary Statistics**

	Mean	SD
Border crossing attempts	759.51	(8294.28)
Budget Frontex operations (million EUR)	1.63	(2.27)
Total days of Frontex operations	73.88	(67.54)
Number of Frontex operations	1.09	(0.86)
N	2,940	

Note: The table reports the mean and standard deviation of the dependent variable (border crossing attempts) and of the three alternative measures of border enforcement we use in our empirical analysis. Sample: quarterly records for the period 2009-2015.

[9]Note that there can be more than 90 days of operations per quarter if more than one Frontex operation is active on a route in a given quarter.

4.3 Endogenous Border Enforcement

A key challenge in estimating the impact of border policies on unauthorised crossings is the endogeneity of enforcement intensity: border controls are typically strengthened in response to anticipated increases in undocumented migration. This concern is particularly relevant in our context, as Frontex operations are planned and designed to respond to surges in undocumented crossings at the EU external borders (see Section 2). Factors driving migratory pressure on a given route simultaneously affect both crossings and enforcement, creating a positive correlation that upward biases OLS estimates of the elasticity of crossings to enforcement (i.e., the coefficient δ_1 in equation (7)). In order to break this simultaneity, one must identify factors that influence enforcement levels while remaining orthogonal to expected unauthorised flows.[10] Our identification strategy leverages political determinants of EU border enforcement decisions to develop exogenous instruments for border enforcement policies. In particular, we propose two alternative and novel instrumental variable strategies that exploit distinct political features of the decision-making process of EU border enforcement.

The Rotation of the EU Presidency. Our first IV strategy exploits the peculiar organisation of power-sharing in the EU governance. The instrument is based on the predetermined six–month rotation of the so–called "EU presidency", i.e., the presidency of the Council of the EU, one of the main decision-making bodies of the EU. The Council is composed of government ministers from each EU country and has five main roles: (i) negotiating and adopting EU legislation; (ii) coordinating EU Member States' policies; (iii) developing the EU common foreign and security policy; (iv) concluding international agreements; (v) adopting the EU budget. The presidency of the Council rotates among the EU Member States every six months following a predetermined schedule based on the alphabetical order of Member States' names in their own language (see Appendix Table A.2.). The presidency has two main tasks: organizing and chairing Council meetings and representing the Council in interactions with other EU institutions. At the beginning of the semester, the presidency outlines a program and sets policy priorities to guide its actions. Political scientists (see, among others, Warntjen, 2007; Hage,

[10] Alternative instrumental variable strategies have been used in the literature on the US-Mexico border, exploiting arguably exogenous variation in border controls generated by either changes in other types of enforcement expenditures (e.g., defense, drug enforcement) or by political cycle in enforcement decisions. Hanson and Spilimbergo (1999) exploit U.S. government expenditures on national defense and the timing of U.S. presidential, congressional, and gubernatorial elections. Angelucci (2012) proposes using the Drug Enforcement Administration (DEA) budget or, alternatively, the share and seniority of members from border states and districts of the federal appropriations committee. Administrative delays in budgetary allocations for border security are instead exploited by Bohn and Pugatch (2015).

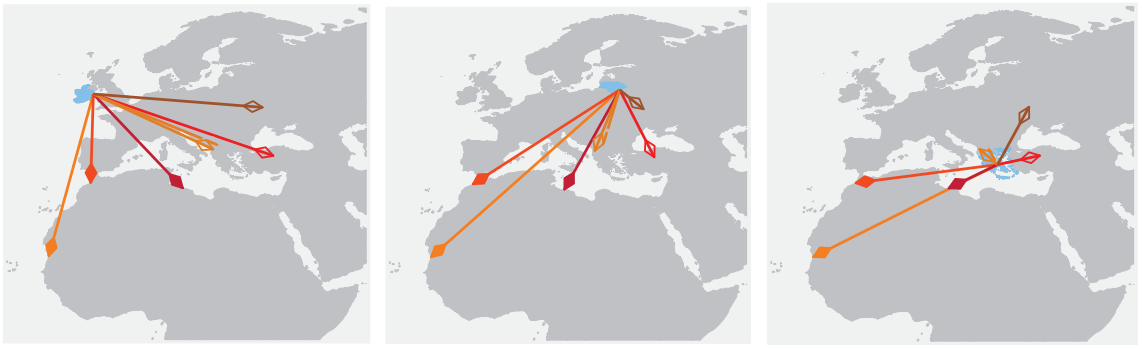
2017; Vaznonyt, 2020) widely agree that Council Presidencies can not only set the agenda but also advance their domestic preferences and determine EU policy outcomes: "*the office of the Council Presidency offers its holder a privileged opportunity to shape the EU policy agenda in accordance with national interests.*" (Tallberg (2003), p. 13). As a matter of fact, the very existence of a predetermined rotation system acknowledges the political influence tied to this role. Empirical evidence shows that the Council Presidency allows holders to affect the distribution of the EU budget, securing more funds for themselves (Aksoy, 2010) or for former colonies (Carnegie and Marinov, 2017).[11]

In our context, the Member State holding the EU Presidency is expected to exert greater influence over border enforcement decisions and the allocation of operational resources, particularly toward routes it considers strategically important. As the Presidency represents the Council in all interactions with EU bodies and agencies, including Frontex, it has increased opportunities to shape Frontex's actions and decisions. Frontex joint operations are planned based on an Annual Risk Analysis Report, which assesses the likelihood of unauthorised migration attempts along the EU's external borders (see Section 2). The agency then prioritises these operations according to their importance and available resources. Decisions regarding the launch, extension, or suspension of operations are officially made during five annual meetings of Frontex's Management Board, which includes the agency's Executive Director, representatives from each Member State, and two members of the European Commission. Notably, while most Frontex board meetings take place at the agency's headquarters in Warsaw, one meeting per semester is hosted by the country holding the EU presidency. Official minutes from these meetings indicate that the representatives of the Presidency country inform the Board about their term's priorities. Although not all Member States have the same level of interest in shaping EU border policies, some may view migration as a pressing issue, and their geographic proximity to external borders strengthens their incentives to prioritise border enforcement during their presidency. At the same time, the EU may also have a vested interest in accommodating border enforcement requests from the Member States holding the Presidency. Since these countries receive heightened media and political attention during their term, the EU has incentives to prevent major migration shocks that could damage the Union's overall image.

We operationalise these conjectures by instrumenting enforcement on each route r in quarter t with

[11] Beyond the EU presidency, other studies have highlighted the importance of nationality in influencing decisions of international and supranational institutions. Gehring and Schneider (2018) show that the appointment of EU Agricultural Commissioners is associated with an increase in the EU budget allocated to their countries of origin. Similar findings for temporary members of the UN Security Council are reported in Kuziemko and Werker (2006) and Dreher et al. (2009).

Figure 2: **Rotation of the EU presidency and Distance from Entry Routes**



Notes. The figure displays the variation in distance between countries holding the EU presidency and entry routes in the EU over three consecutive presidencies (Ireland, Jan-Jun 2013; Lithuania, Jul-Dec 2013; Greece, Jan-Jun 2014).

the linear distance between the capital city of the country from where a route starts and the capital city of the state holding the EU Presidency in that quarter ($dist_EUpres_{rt}$).[12] This instrument relies on cross-sectional variation in route-EU countries distances – which is controlled for in our specification by the route fixed effects – and on the time variation generated by the pre-determined variation in EU Presidencies. Since the EU Presidency is assigned by an exogenous and pre-determined principle, its rotation provides us with a valid instrument under the reasonable identifying assumption that distance from the EU presidency does not produce a direct effect on migratory pressure on EU borders other than through the effect of changes in border enforcement. If the mechanism we described above is actually in place, the distance between routes and EU Presidency countries will negatively correlate with the intensity of border enforcement operations along different routes. Figure 2 graphically illustrates the variation of our proposed instrument over three consecutive EU presidencies (Ireland, Jan-Jun 2013; Lithuania, Jul-Dec 2013; Greece, Jan-Jun 2014).

Timing of National Elections. The EU has a clear interest in avoiding the electoral success of anti-EU parties in national elections of EU Member States: existing evidence suggests that more European funds are assigned to countries with incoming elections (Schneider, 2013) and with larger shares of Eurosceptic voters (Bouvet and Dall'Erba, 2010). A growing literature has established the link between exposure to migratory flows and electoral outcomes in the European context (e.g. Barone

[12]We use the following capitals as starting points of the seven main entry routes: Tripoli, Libya (Central Mediterranean); Kyiv, Ukraine (Eastern Borders); Istanbul, Turkey (Eastern Mediterranean Sea and Land); Nouakchott, Mauritania (Western African); Rabat, Morocco (Western Mediterranean Sea); Skopje, Macedonia (Western Balkan). See Online Appendix Section B.1.1 for a detailed description of these routes. In Online Appendix Figure B.4, we test the sensitivity of our FS estimates to alternative way of measuring the distance between routes and EU Member States.

et al., 2016; Halla et al., 2017; Dustmann et al., 2019; Hangartner et al., 2019; Moriconi et al., 2022). We may thus expect the EU to adjust enforcement to minimise the risk that the arrival of large numbers of undocumented immigrants and refugees may shift voting behavior towards xenophobic, populist, and anti-EU parties. In particular, we may observe more enforcement along routes that lead to countries with incoming elections, especially if Euroscepticism is widespread among their voters.

These arguments explain the underlying rationale of our second IV strategy, which is based on the timing of national elections in EU countries. We construct this instrument in the following way: for each route of entry in Europe, we first rank countries according to the distance of their capital city from the capital city of the country of arrival of that route and we then define a dummy variable ($d_elect(C = n)_{rt}$), that takes value 1 if there is a national election in quarter t in any of the n EU countries closest to the arrival point of route r. We further develop an extended version of this instrument to capture the idea that EU institutions may be particularly reactive to elections in countries characterised by stronger anti-EU attitudes. Using Eurobarometer data (see Online Appendix Section B.1.4), we compute the share of respondents who reported low trust in the EU institutions and define eurosceptic countries as those where that share is above the EU average. We then construct a second version of our instrument ($d_el_lowtrustEU(C = n)_{rt}$), which exclusively considers elections in strongly eurosceptic countries. Note that we use Eurobarometer responses lagged by one year to avoid simultaneity concerns. For both versions of the instrument, we will develop our main analysis using the three closest countries to each route (i.e., $n = 3$), while testing the sensitivity of our results to alternative choices of n. If concerns about the results of national elections in Member States do indeed affect border enforcement decisions at the EU level, then we expect to observe a positive and statistically significant correlation between the amount of border enforcement and these election-based instruments. Our identifying assumption requires that the timing of elections in EU countries – and the lagged level of trust in EU institutions among their citizens – does not produce a direct effect on crossings (other than through enforcement), and it is not correlated with unobserved factors determining higher migratory pressure on any given route.

4.4 Measurement Issues: Detected and Actual Crossings

Beyond the potential endogeneity of border enforcement, a second important empirical challenge is created by the measure of unauthorised border crossings. Since undocumented inflows are inherently

unobservable, we - like previous studies on U.S. border enforcement (see Hanson and Spilimbergo, 1999 for a formal discussion of this measurement issue) - use detected crossing attempts as a proxy for actual flows. On the one hand, apprehensions may overestimate the actual inflows because they count migration attempts rather than migrants, and the same individual may make several crossing attempts. On the other hand, apprehensions only capture the subset of overall migration attempts that were detected, leading to an underestimation of the real flows. This latter issue also implies that any observed change in apprehension statistics – both across areas and over time – may reflect changes in enforcement (i.e., changes in the share of attempts that get detected) rather than actual changes in inflows. We can decompose the elasticity of detected migration attempts to changes in enforcement into a detection and a deterrence effect. The *detection effect* is the direct effect of enforcement on the probability of being detected, and it is expected to be positive: an increase in enforcement will lead to more detections for any given level of migration. The *deterrence effect* is the effect of enforcement on the number of attempts, and it is expected to be negative: increased enforcement will possibly discourage migrants from attempting an illegal crossing. Note that if enforcement effectively deters unauthorised crossings, the estimated elasticity of detected attempts provides an upper bound for the deterrence effect. Estimating a positive elasticity would indicate that detection outweighs deterrence, or that deterrence is negligible. Conversely, a negative elasticity would confirm that enforcement reduces migration attempts, though its magnitude would be attenuated by the detection effect. We formally discuss these issues in Online Appendix B.2.

5 Results: Migrants Crossings and Route Enforcement

This Section reports our main empirical estimates of the elasticity of log migration attempts to border enforcement (see equation (7)). We first present OLS estimates (section 5.1) and then first stage regressions (section 5.2) and 2SLS and RF estimates (section 5.3). Finally, we present some robustness checks and the heterogeneous effects of border enforcement on refugees and other migrants (sections 5.4 and 5.5). Throughout the analysis, we separately use the three alternative measures of enforcement discussed in Section 4.2.2: the logarithm of total budget spent for operations on route r in period t ($ln(budget_FXop)$), the logarithm of total number of days of active operations on route r in period t ($ln(days_FXop)$) and the number of active operations on route r in period t (N_FXop). Although

highly correlated – the correlations between the three measures vary between 0.7 and 0.9 - they capture different dimensions of the enforcement.[13] Further, we cluster standard errors by area of origin and route – obtaining 49 clusters in our main specification – to account for correlation in shocks affecting migrants originating from the same area and entering Europe through the same route (we report estimates with clustering at the route level as a robustness check in Online Appendix Table B.2).[14]

5.1 OLS estimates

Panel A of Table 2 reports our OLS estimates of coefficient δ_1 in equation (7), which capture the effects of changes in enforcement on log crossings. We measure border enforcement with our three proposed measures: $ln(budget_FXop)$ (columns 1-2), $ln(days_FXop)$ (columns 3-4) and N_FXop (columns 5-6). In odd columns, we condition on route–country and country–time fixed effects only, whereas, in even columns, we further include quarter–route dummies to capture route–specific seasonality. Overall, these estimates are fairly inconclusive, showing no significant correlation between crossings and enforcement.

In Panel B of Table 2, we investigate potential differences between sea and land operations: we interact each enforcement measure with dummies that identify whether they were implemented on sea or land routes, and we include both interacted terms in our main specification. These two types of operations are very different in nature. While land operations are exclusively meant to secure a border and prevent unauthorised immigrants from trespassing, sea operations typically have a "search and rescue" component, patrolling sea borders but also preventing human losses at sea. As often suggested in the media and political debate in recent years, sea operations may act as a "pull factor" –attract more inflows rather than deterring them – by reducing the death hazard of migrants that undertake these dangerous journeys.[15] As the estimates reported in Panel B show, we find that crossings are

[13] When taking logs of crossings, budget and days we use the transformation $\ln(x+1)$ to deal with zeros in these variables (we use $x + 0.01$ for Frontex operation days). In Online Appendix Table B.3 we show that our results are not affected by using the alternative inverse hyperbolic sine transformation for migrant crossings.

[14] We group nationalities into areas of origin according to the M49 area classification. Our top 15 countries of origin belong to the following seven areas: Eastern Africa, Eastern Europe, Northern Africa, Southern Asia, Southern Europe, Western Africa, and Western Asia.

[15] For instance, in a 2017 interview with the German magazine *Die Welt*, former Frontex director Fabrice Leggeri stated that "smugglers are forcing even more migrants onto unseaworthy boats than in previous years" due to the presence of European ships close to Libyan borders (our translation from German: `https://www.welt.de/print/welt_kompakt/print_politik/article162409451/Einsaetze-vor-Libyen-muessen-auf-den-Pruefstand.html`, last accessed on 27/02/2024.). These words echo the results of Deiana et al. (2024) who find that the intensification of European SAR operations in 2013 led to an increase of crossings in dangerous conditions since smugglers sent boats to the sea in more adverse weather and shifted from seaworthy boats to flimsy rafts.

positively correlated with enforcement on sea routes and negatively correlated on land routes. In both cases, the estimates are statistically significant at conventional levels. These estimates would suggest that increasing enforcement along land routes effectively discourages migration there. On sea routes, instead, either a positive *detection effect* prevails on a negative *deterrence effect* (as discussed in Section 4.4), or the latter may be even positive, as maintained by the proponents of the pull–factor argument. Since we expect OLS estimates to be upward biased by the endogeneity of enforcement (see Section 4.3), we need to look at the 2SLS before drawing conclusions on the effectiveness of enforcement.

Table 2: **Migrant Crossings and Route Enforcement: OLS Estimates**

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A - All Routes						
ln(budget_FXop)	-0.009	-0.005				
	[0.011]	[0.014]				
ln(days_FXop)			-0.020	-0.015		
			[0.018]	[0.022]		
N_FXop					0.102	0.120
					[0.077]	[0.089]
Panel B - Sea and Land Routes						
ln(budget_FXop)-Sea Route	0.023**	0.044***				
	[0.011]	[0.011]				
ln(budget_FXop)-Land Route	-0.045***	-0.047***				
	[0.016]	[0.017]				
ln(days_FXop)-Sea Route			0.034*	0.066***		
			[0.018]	[0.018]		
ln(days_FXop)-Land Route			-0.071***	-0.075***		
			[0.024]	[0.026]		
N_FXop-Sea Route					0.243***	0.308***
					[0.072]	[0.063]
N_FXop-Land Route					-0.048	-0.042
					[0.139]	[0.145]
Observations	2,940	2,940	2,940	2,940	2,940	2,940
Route-Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Route FE	No	Yes	No	Yes	No	Yes

*Note: The table reports OLS estimates of the logarithm of detected irregular migration attempts on route r and quarter t on three alternative measures of enforcement (on the same route and quarter): ln(budget_FXop) (col. 1-2), ln(days_FXop) (col. 3-4) and N_FXop (col. 5-6). In odd columns, we condition on fixed effects for route–origin country and time–origin country, while in even columns, we further condition on quarter–route dummies. In Panel A, we consider all routes together, while in Panel B, we separately estimate enforcement elasticities for land and sea routes. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin–route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

5.2 First Stage Estimates: Political Cycles in EU Enforcement

Distance from EU Presidency. As discussed in Section 4.3, we propose to instrument enforcement with the linear distance between route r and the EU country that is holding the EU presidency in quarter t ($dist_EUpres_{rt}$). If countries that hold the EU presidency manage to have more enforcement

on routes closer to their national borders, we expect a negative coefficient on our proposed instrument. First-stage estimates are reported in Table 3. For all three measures of enforcement, the estimated coefficient on $dist_EUpres_{rt}$ is negative and statistically significant at 1%: the farther away a route is from the country holding the EU presidency, the lower the level of enforcement. The magnitude of the effect is economically relevant. We standardised the measure of distance, hence the estimated coefficients imply that one standard deviation increase in the distance from the current EU presidency leads to reductions of .69 log point in budget and of .41 log points in operation days, and to 0.12 fewer operations on a given route. These estimated effects correspond to reductions of approximately 30 percent of one standard deviation for budget and days and 14% of the standard deviation of the number of active operations (see Table 1 for averages and standard deviations of our three enforcement measures). The smaller effect on this latter variable suggests that happening to be farther away by the country holding the EU presidency reduces the budget allocation and the duration of operations more than affecting the probability that they are implemented, suggesting that our instrument may predominantly influence decisions to renew, extend and intensify operations, which is compatible with the decision process described in Section 4.3. The (Kleibergen-Paap) F–statistics for the joint significance of excluded instruments reported in the last row of the table show that our proposed instrument is a strong predictor of the EU border enforcement effort. When conditioning on quarter–route dummies, the F–statistics is approximately 41, 30, and 16 for the log budget, the log number of days of operations, and the number of operations, respectively. Since our empirical approach is a just-identified IV estimator with a single endogenous variable (just-ID IV), the coherence of the sign of the first stage regression coefficient with the theoretical argument underlying our proposed instrument should minimise concerns about finite-sample biases of our IV estimates (Angrist and Kolesar, 2024).

Appendix Table A.3 tests the robustness of our first-stage estimates and explores the underlying mechanism of our proposed instrument. We first check whether our instrument is capable of predicting enforcement also when we exclude the critical years of the so-called "refugee crisis" (2014 and 2015) in which the size of the flows and the political attention devoted to them were extraordinary. For each measure of enforcement (columns 1, 4, and 7), limiting the sample to the period 2009-2013 delivers equally significant estimates and strong F-stats. We then assess whether the first stage is stronger for countries that are more geographically exposed to migration flows and should, therefore, be more active in securing a shift of enforcement resources toward closer routes when they hold the EU presidency.

First, we include the instrument $dist_EUpres_{rt}$ and its interaction with a dummy that identifies EU countries located at the external EU borders (columns 2, 5, and 8): the coefficient on the interaction identifies a differential effect of the instrument for the subset of countries that held the EU presidency and were directly exposed to migratory inflows in the period 2009–2015 (i.e. Spain, Italy, Greece, Hungary, and Malta). We estimate a negative and precisely measured coefficient on the instrument $dist_EUpres$ for all three measures of enforcement and, for the first two measures, an additional large and negative effect on countries lying at the external EU borders. In a second test, we compare the first stage for two consecutive EU presidencies: one held by Lithuania (in Jul–Dec 2013; see Appendix Table A.2), a country geographically distant from main migrants entry routes, and the other by Greece (in Jan–Jun 2014), a country which was instead at the forefront of the "refugee crisis" (columns 3, 6, and 9). We do so by including our main instrument $dist_EUpres$ together with its interactions with two dummies identifying the semester of EU presidency held by these two countries. While the estimated coefficient on $dist_EUpres$ remains negative and statistically significant, we estimate an additional (and strongly significant) negative effect under the Greek presidency and a non-signifcant differential effect under the Lithuanian presidency. Both tests thus support the political economy mechanism described in Section 2: while the distance from the current EU presidency is a predictor of EU enforcement on the different routes throughout the entire period we study, the correlation becomes particularly strong when countries with a specific concern about migration hold that office.

Table 3: **First Stage: Route Enforcement and Distance from EU Presidency**

	(1)	(2)	(3)
	ln(budget_FXop)	**ln(days_FXop)**	**N_FXop**
dist_EUpres	-0.692***	-0.410***	-0.123***
	[0.108]	[0.075]	[0.031]
Observations	2,940	2,940	2,940
Period	2009-15	2009-15	2009-15
Route-Country FE	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes
IV: KP F-stat	41.28	30.03	15.63

*Note: The table reports first stage estimates of alternative enforcement measures on the instrument dist_EUpres (i.e. the linear distance between route r and the country holding the EU presidency in quarter t) and a full set of fixed effects. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin–route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

Additional robustness tests are presented in Online Appendix Figure B.4, demonstrating that the predictive power of the instrument $dist_EUpres_{rt}$ is preserved under various alternative constructions

of the distance between routes' starting countries and EU presidency states. In particular, while our primary instrument is constructed using capital-to-capital distances (see Section 4.3), we explore alternative metrics that include border and centroid-based distances, as well as logarithmic transformations of these distances.

Timing of National Elections. Our second IV strategy exploits the increased incentives that EU institutions may have to provide more border enforcement on migratory routes leading to countries that have an upcoming national election, especially if the electorate is highly Eurosceptic. Panels A, B, and C of Table 4 report first stage estimates in which the endogenous variables are $lnbudget_FX$, $lndays_FX$ and num_FX, respectively. In column 1, we instrument enforcement on any given route and quarter with the variable $d_elect(C = 3)_{rt}$, a dummy that takes value one if there is an upcoming national election in at least one of the three countries that are closest to the arrival point of each route. In column 2, the instrument is instead $d_el_lowtrustEU(C = 3)_{rt}$, which takes value one only if the country with an upcoming election also has a large share of Eurosceptic voters (see Section 4.3). In both columns, the estimated coefficients are statistically significant and positive (except for column 1 in Panel C), implying that an upcoming election in countries close to the arrival point of a migratory route tend to increase border enforcement on that route. The effect is clearly stronger in countries that display widespread anti-EU sentiments (column 2). According to our estimates, an imminent election in a Eurosceptic country close to the arrival of a migratory route increases the border enforcement budget (days) by 1.89 (1.42) log points, and the number of border enforcement operations by 0.18 (16% of the sample mean, or 21% of a standard deviation). The F-stat reported in the bottom row of each panel suggests that $d_elect(C = 3)_{rt}$ is a relatively weak instrument, whereas $d_el_lowtrustEU(C = 3)_{rt}$ displays values of the F-stat that are firmly above conventional thresholds. We will thus use the latter variable in our empirical analysis, as an alternative to the EU presidency distance instrument. In column 3 of Table 4, we include the $dist_EUpres$ IV together with $d_el_lowtrustEU(C = 3)_{rt}$ instrument. Note that including both instruments at the same time in the specification delivers strongly significant coefficients and does not alter the point estimates with respect to the case in which we individually include each instrument, implying that the two alternative instruments are uncorrelated and exploit independent variation in enforcement. Indeed, the correlation between the EU Presidency distance and the national election instruments is barely 0.006, increasing

to 0.097 when considering only elections in Eurosceptic countries. Having two instruments allows performing a Sargan-Hansen test of the over-identifying restrictions: according to the J-statistics p-values reported in Table 4, we fail to reject the null hypothesis of the validity of our instruments. Online Appendix Table B.6 shows that the strength of our first stage is preserved when varying the number of closest countries to each route between two and four in the construction of our elections IV.

Table 4: **First Stage: Route Enforcement, Distance from EU Presidency and National Elections**

	(1)	(2)	(3)
Panel A: ln(budget_FXop)			
d_elect (C=3)	0.729**		
	[0.304]		
d_el_lowtrustEU (C=3)		1.894***	2.008***
		[0.370]	[0.382]
dist_EUpres			-0.751***
			[0.110]
IV: KP F-stat	5.742	26.16	23.69
IV: J-stat p-value			0.274
Panel B: ln(days_FXop)			
d_elect (C=3)	0.424**		
	[0.198]		
d_el_lowtrustEU (C=3)		1.419***	1.489***
		[0.247]	[0.256]
dist_EUpres			-0.454***
			[0.076]
IV: KP F-stat	4.602	32.98	20.12
IV: J-stat p-value			0.126
Panel C: N_FXop			
d_elect (C=3)	-0.031		
	[0.065]		
d_el_lowtrustEU (C=3)		0.182***	0.202***
		[0.053]	[0.054]
dist_EUpres			-0.129***
			[0.032]
IV: KP F-stat	0.222	12.05	9.908
IV: J-stat p-value			0.898
Observations	2,940	2,940	2,940
Period	2009-2015	2009-2015	2009-2015
Route-Country FE	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes

*Note: The table reports first stage estimates of alternative enforcement measures (Panel A: ln(budget_FXop); Panel B: ln(days_FXop); Panel C: N_FXop) on the national elections instrument (i.e. a dummy for incoming national elections in one of the three countries closest to the of arrival of each route; column 1) and its version that only considers election in countries with a low level of trust in the EU (columns 2 and 3). In column 3, we also include the EU presidency instrument. A full set of fixed effects is included in all regressions. Sample: top 15 nationalities (2009–2015). Standard errors are clustered at the area of origin–route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

5.3 2SLS estimates

Main estimates. Panel A of Table 5 reports 2SLS estimates of the elasticity of unauthorised migration flows to our three alternative measures of enforcement, instrumenting the latter with the distance between the route and the country holding the EU presidency (columns 1-3). All three estimated coefficients are negative and significantly different from zero, suggesting that increasing enforcement on a route leads to a reduction in undocumented immigrants attempting to use it to access the European Union. The magnitudes of the effects are modest but economically relevant and broadly consistent across specifications. Specifically, our estimates imply that a 10% increase in border enforcement budget on one route leads to a 1.5% reduction in migrant crossings on that route; a 10% increase in days of operations on a route leads to a 2.6% decrease in crossings on that route; and a 10% increase in the number of active operations on a route relative to the sample mean (i.e., an increase of 0.11 operations per quarter) leads to a 8.6% decrease in same–route crossings. When compared with the OLS estimates (Table 2), 2SLS estimates are larger in magnitude, as we would expect from removing the positive bias implied by the endogeneity of enforcement (see Section 4.3). As argued in Section 4.4, these estimated negative coefficients allow us to conclude that increasing border enforcement on a route generates a negative *deterrence effect* on migrant crossing through that route, although the true magnitude of this impact is potentially attenuated by a positive *detection effect*. Column 4 reports the reduced form estimate obtained by regressing (log) migrant crossings directly on the distance from the EU presidency: the positive and significant estimated coefficient implies that routes that happen to be farther away from the current EU presidency experience an increase in unauthorised migration. It seems hard to think about a mechanism other than changes in enforcement that may explain this positive correlation.

In Panel B of Table 5, we explore the heterogeneity of the effect of border enforcement between sea and land routes. All the 2SLS estimates are negative, and the size of the estimated coefficients are similar on sea and land routes (except for the N_FXop variable, for which the effect on sea route is substantially smaller), but only those for land routes are statistically significant at conventional levels. These results suggest that enforcement on a land route leads to a sizeable reduction in migration on that route; the effects on sea routes point in the same direction, although they are imprecisely estimated and possibly smaller. The RF estimates (Panel B in Table 5, column 4) display a similar pattern, with an estimated coefficient on the instrument for land routes which is more negative than

for sea routes and more precisely estimated. Although imprecisely estimated, the sign of the 2SLS and RF estimates of enforcement on sea routes rule out the existence of the "pull factor" of naval operations discussed in Section 5.1.

Table 5: **Migrant Crossings and Route Enforcement: 2SLS and RF estimates**

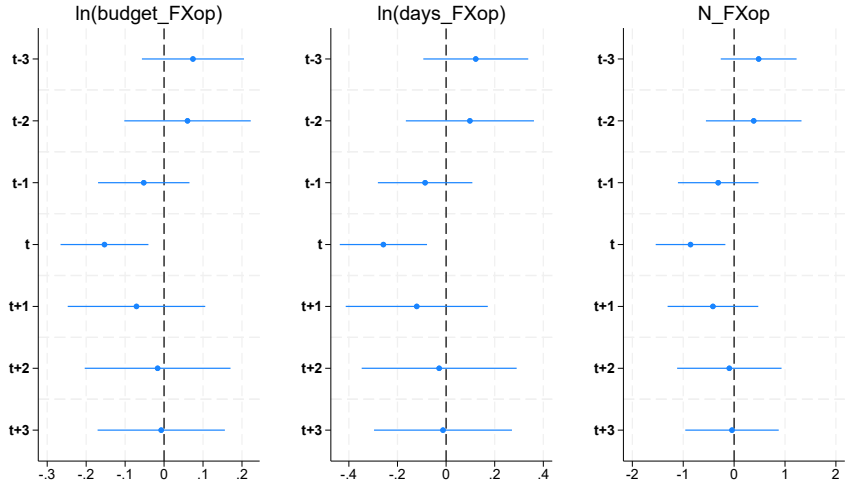
	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) RF
Panel A - All Routes				
ln(budget_FXop)	-0.153***			
	[0.056]			
ln(days_FXop)		-0.258***		
		[0.089]		
N_FXop			-0.856**	
			[0.340]	
dist_EUpres				0.106**
				[0.042]
IV: KP F-stat	41.30	30.05	15.64	
Panel B - Sea and Land Routes				
ln(budget_FXop)-Sea Route	-0.167			
	[0.154]			
ln(budget_FXop)-Land Route	-0.147**			
	[0.062]			
ln(days_FXop)-Sea Route		-0.221		
		[0.193]		
ln(days_FXop)-Land Route		-0.279**		
		[0.117]		
N_FXop-Sea Route			-0.265	
			[0.366]	
N_FXop-Land Route			-1.557*	
			[0.867]	
dist_EUpres-Sea Route				0.058
				[0.099]
dist_EUpres-Land Route				0.184*
				[0.109]
IV-sea: KP F-stat	9.737	13.27	44.84	
IV-land: KP F-stat	52.73	31.58	5.659	
Observations	2,940	2,940	2,940	2,940
Route-Country FE	Yes	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes	Yes

*Note: The table reports 2SLS (col. 1-3) estimates of log crossings on route r and quarter t on three alternative measures of enforcement (on the same route and quarter) - ln(budget_FXop) (col. 1), ln(days_FXop) (col. 2) and N_FXop (col. 3) - instrumenting enforcement with the distance to EU presidency variable (dist_EUpres). Reduced Form (RF) estimates of log crossings on the instrument are reported in column 4. All specifications include fixed effects for route-origin country, time-origin country and quarter-route dummies. In Panel A we consider all routes together while in Panel B we separately estimate enforcement elasticities for land and sea routes. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin-route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

Timing and Persistence. The estimates discussed so far are obtained from a contemporaneous specification that relates enforcement in quarter t to migration in the same quarter. We investigate

the timing of the effect by estimating modified versions of our estimating equation (7) where we measure enforcement, in turn, in all quarters between $t-3$ and $t+3$. Regressions using lags allow the detection of any potential persistent effects of past enforcement on migrants' decisions to cross the border. Regressions of current crossings on future enforcement, instead, provide an important falsification exercise: any significant effect of enforcement in $t+1$, $t+2$, or $t+3$ on crossings in t would cast serious doubts on the causal interpretation of our main estimates. We report our estimates in Figure 3. The effect on crossings is statistically significant only on contemporaneous enforcement: we do not find evidence of persistence in this effect, and our approach passes the falsification test, showing no effect of leads of enforcement on current migration.

Figure 3: **Migrant Crossings and Route Enforcement: 2SLS Estimates - Timing**



Notes. The Figure reports 2SLS estimates and 95% confidence intervals - for each of the three measures of enforcement - from separate regressions of log crossings on enforcement in the current quarter, or on up to three lags and up to three leads. Each point estimate is obtained from a 2SLS regression in which enforcement is instrumented with the distance from the EU presidency variable. All specifications include fixed effects for route-origin country, time-origin country, and quarter-route dummies. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin-route level (49 clusters).

Alternative IV strategies. 2SLS and RF estimates from using our alternative instrument based on incoming elections are reported in Table 6: in odd columns, we use the instrument based on incoming elections in countries with a high (lagged) share of eurosceptics alone, taking the three closest countries of arrival for each route (i.e. $d_el_lowtrustEU(C=3)$), whereas in even columns

we jointly use the elections and distance from EU presidency instruments.[16] As discussed in Section 5.2, the two instruments display completely independent variation since the national political cycle and the rotation of the EU presidency are uncorrelated events. The 2SLS estimates obtained from using the elections instrument alone confirm that an increase in enforcement leads to a contemporaneous reduction in crossings, although the point estimates are a bit smaller in magnitude than those reported in Panel A of Table 5. When both instruments are jointly employed, the estimates become larger and more precise. Finally, columns 7 and 8 in Table 6 report RF estimates, showing that while incoming elections lead to a reduction in crossings, being farther away from the current EU presidency implies an increase in attempted crossings on the route.

Table 6: **Migrant Crossings and Route Enforcement: 2SLS and RF estimates - Alternative IV Strategies**

	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS	(6) 2SLS	(7) RF	(8) RF
ln(budget_FXop)	-0.077*	-0.108***						
	[0.043]	[0.033]						
ln(days_FXop)			-0.102*	-0.151***				
			[0.057]	[0.047]				
N_FXop					-0.796*	-0.838***		
					[0.455]	[0.295]		
d_el_lowtrustEU (C=3)							-0.145*	-0.162**
							[0.078]	[0.077]
dist_EUpres								0.111**
								[0.042]
IV: d_el_lowtrustEU	Yes	Yes	Yes	Yes	Yes	Yes		
IV: dist_EU_pres	No	Yes	No	Yes	No	Yes		
IV: KP F-stat	26.16	23.69	32.98	20.12	12.05	9.908		
Observations	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940
Route-Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: The table reports 2SLS estimates (columns 1-6) of log crossings on route r and quarter t on three alternative measures of enforcement (on the same route and quarter) - ln(budget_FXop) (col. 1-2), ln(days_FXop) (col. 3-4) and N_FXop (col. 5-6). In odd columns, we instrument enforcement with a binary variable for incoming elections in countries with a high (lagged) share of eurosceptics, taking the three closest countries of arrival for each route (i.e., d_el_lowtrustEU[C = 3]). In even columns, we jointly use the election instrument with the distance to the EU presidency instrument (dist_EUpres). Reduced Form (RF) estimates of log crossings on the instruments are reported in columns 7-8. All specifications include fixed effects for route-origin country, time-origin country, and quarter-route dummies. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin-route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

[16]Note that the simpler version of the incoming elections instrument – i.e., the dummy for having at least one election, $d_elect(C = 3)$ – although positively correlated with the measures of enforcement, displays low values of the F-statistics in the first stage (see column 1 in Table 4), delivering very imprecise estimate in the second stage.

5.4 Further Robustness Checks

Our results are robust to a series of additional robustness checks, which are reported in Online Appendix B.3.1. First, we drop 2014 and 2015 from our sample period – these two years marked the peak of the "refugee crisis" and were also the years when the first NGOs started performing SAR operations in the Mediterranean sea – and then exclude the Western Balkan route from the analysis (to deal with concerns of double counting of migrants entering Europe through the Eastern Mediterranean Route; see Online Appendix Table B.1). Second, we test the sensitivity of our estimates to changes in the set of source countries considered: we first leave out one of the top 15 countries at a time (Online Appendix Figure B.5), and we then vary the set of countries in the sample from the top 10 to the top 20 source countries (Online Appendix Figure B.6). Third, we replicate our estimates by aggregating crossings from all origin countries at the route level and we cluster standard errors at the route level using wild bootstrap to deal with the small number of clusters (Online Appendix Table B.2). Fourth, we use an inverse hyperbolic sine transformation of migrant crossing rather than the log transformation we use in our main results (Online Appendix Table B.3). Fifth, we control for alternative measures of national enforcement in European countries to assess potential crowding-in or crowding-out effects between EU-level and national-level operations (Online Appendix Tables B.4 and B.5). Finally, we vary the construction of our alternative IV based on incoming elections (Online Appendix Table B.6).

5.5 Heterogeneous Effects: Refugees and Economic Migrants

The impact of border enforcement is likely to vary across different groups of migrants. In particular, we may expect refugees to be less responsive to enforcement than economic migrants for at least two reasons. Firstly, the push factors driving refugees' choices – conflict and persecution rather than economic hardship – provide limited scope for delaying migration. Second, interception by border authorities should enable refugees to apply for international protection, allowing them to reside legally in the host country while their claim is assessed, and potentially beyond, if their application is successful. By contrast, migrants lacking strong grounds for asylum typically face either refusal of entry at the border or deportation following apprehension, making interception a greater deterrent. Using our aggregate data on border crossings we can distinguish flows of potential refugees from those of economic migrants based on the political situation in their countries of origin at the time of

migration. We define "refugees" as individuals arriving from countries experiencing conflict, violence, or displacement in the year of their migration, and "economic migrants" as those originating from relatively stable and safer countries.

Table 7: **Migrant Crossings and Route Enforcement: 2SLS estimates - Refugees and Economic Migrants**

	(1) 2SLS	(2) 2SLS	(3) 2SLS
Panel A - Terror States			
ln(budget_FXop) * non-State Terror	-0.217***		
	[0.079]		
ln(budget_FXop) * State Terror	0.139		
	[0.200]		
ln(days_FXop) * non-State Terror		-0.347***	
		[0.122]	
ln(days_FXop) * State Terror		0.148	
		[0.289]	
N_FXop * non-State Terror			-1.155***
			[0.424]
N_FXop * State Terror			0.111
			[0.650]
Panel B - Internally Displaced People (IDPs)			
ln(budget_FXop) * IDPs=0	-0.455***		
	[0.151]		
ln(budget_FXop) * IDPs>0	0.316		
	[0.228]		
ln(days_FXop) * IDPs=0		-0.725***	
		[0.236]	
ln(days_FXop) * IDPs>0		0.450	
		[0.342]	
N_FXop * IDPs=0			-2.041***
			[0.755]
N_FXop * IDPs>0			0.699
			[0.654]
Observations	2,940	2,940	2,940
Route-Country FE	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes

*Note: The table reports 2SLS (col. 1-3) estimates of log crossings on route r and quarter t on three alternative measures of enforcement (on the same route and quarter) - ln(budget_FXop) (col. 1), ln(days_FXop) (col. 2) and N_FXop (col. 3) - instrumenting enforcement with the distance to EU presidency variable (dist_EUpres). Each measure of enforcement is interacted with dummy variables for countries that: i) Panel A: are subject or not subject to"state terror" (i.e. scoring five out of five according to the Political Terror Scale of the US State Department); ii) Panel B: host Internally Displaced People or not (UNHCR Data). See Online Appendix B.1.3. All specifications include fixed effects for route-origin country, time-origin country and quarter-route dummies: *** p<0.01, ** p<0.05, * p<0.1.*

Specifically, we identify as "refugee-sending countries" those that are either subject to "state terror" (i.e., scoring five out of five according to the Political Terror Scale of the US State Department) or that host a positive number of Internally Displaced People (IDPs) based on UNHCR records (see Online Appendix Section B.1.3). In our main sample of 15 origin countries over the period 2009–

2015, approximately 21% of the observations are from countries deemed to be subject to state terror and 39% from countries with internally displaced citizens. Both indicators display cross–sectional, as well as within–country, variation.[17] We re-estimate equation (7) after interacting our measures of enforcement with dummies for "refugee countries" and "non–refugee countries" of origin. Estimates reported in Table 7 confirm that migrants arriving from countries that are not experiencing major violence and displacement react to changes in border enforcement by reducing their crossings, while those fleeing violence are not responsive. These results hold regardless of whether we use state terror (Panel A) or the presence of IDPs (Panel B) to define refugee–sending countries. Appendix Figures A.3a and A.3b show that this differential effect is robust to changes in the set of source countries from the top 10 to the top 20.

6 Deterrence and Diversion Effects

Tightening border controls increases the cost of illegal crossings and should discourage migration attempts: this is the *deterrence effect* that policymakers typically aim to achieve with border enforcement. However, when alternative entry routes are available, migrants may decide to avoid what would have been their most preferred route – where border controls were intensified – and opt for an alternative route. This *diversion effect* will be substantial when alternative routes are highly substitutable (for instance, because they are geographically close) and when intensified border controls are specific to one route rather than uniformly applied across all borders. In the context we are studying, both effects may occur simultaneously: an increase in enforcement on one route may *divert* some migrants towards a different one, while *deterring* others for whom alternative routes are prohibitively costly or risky.

The estimates presented so far indicate that migrant crossings on a given route decrease when border enforcement on that route intensifies. Our empirical approach, however, does not allow distinguishing between *deterrence* and *diversion effects* because all origin–specific and time–varying factors (including the overall number of people leaving a country) have been conditioned out in our estimat-

[17] Among the top 15 source countries in our main estimating sample and over the period we study (2009–2015): seven countries (Afghanistan, Eritrea, Iraq, Nigeria, Pakistan, Somalia, and Syria; see Online Appendix Figure B.2) have reached the level of "Terror State" in at least one year, five countries (Afghanistan, Iraq, Kosovo, Pakistan and Somalia) have always had a positive number of IDPs and two countries did not initially record any IDPs but started having internally displaced populations during the period of analysis (Nigeria in 2013 and Syria in 2012; see Online Appendix Figure B.3).

ing equation (7) with the inclusion of source country-time fixed effects. Consequently, the observed reduction of crossings on a route following an increase in route–specific enforcement can be driven by a decline in unauthorised migration on that route without any change in crossings elsewhere (*deterrence effect*) but also by a diversion of migratory flows along alternative routes, without any change in total crossings (*diversion effect*). In this Section, we aim to understand whether the effects we have estimated in Section 5 reflect deterrence, diversion or both effects at the same time. We empirically explore this issue in two ways. First, we abstract from route-variation and estimate the overall deterrence effect of border enforcement by estimating the elasticity of the total number of crossings from any given source country to changes in the overall border enforcement faced by migrants (section 6.1). Second, we estimate the size of potential diversion effects across EU entry routes by assessing to which extent the EU–Turkey deal signed in March 2016 – and the ensuing total shutdown of the East Mediterranean route – led to short-run diversion of migratory flows towards alternative routes (section 6.2).

6.1 Effect of Border Enforcement on Total Crossings

To test for deterrence effects of EU border operations on total crossings, we estimate the following equation:

$$\ln mig_{st} = \alpha_0 + \alpha_1 enf_{st} + \mathbf{X}'_{st}\lambda + \theta_s + \tau_t + u_{st} \tag{8}$$

where: mig_{st} is the number of migration attempts from source country s in quarter t and enf_{st} is a measure of the border enforcement faced by migrants from country s in quarter t, $\mathbf{X}'_{st}$ is a vector of control variables that vary across countries and over time, whereas θ_s and τ_t are, respectively, country of origin and time fixed effects. Our coefficient of interest is α_1, which captures the deterrence effect of border enforcement and it is expected to be negative if an increase in border enforcement faced by migrants from country s leads to a decrease in crossings attempts along any entry route in Europe. Basically, equation (8) is obtained by aggregating equation (7) across routes. This aggregation is straightforward for illegal border crossings, which vary at the origin–country level (i.e., $mig_{st} = \sum_r mig_{srt}$). For border enforcement – which is measured at the route-level – we transform the original variable (enf_{rt}) into a variable with country-time variation (enf_{st}) by considering, for each country s, the amount of enforcement on its closest migratory route.[18] Since this variable potentially suffers

[18] In the base year 2009, 85% of all crossings from the 15 top origin countries happened on the closest route. During

from the same endogeneity problems in equation (8) as its route–specific equivalent in equation (7), we adapt our IV strategy to this setting (see Section 4.3). For each source country, we re-define our two alternative instruments as: (i) $dist_EUpres_{st}$: the distance between the migratory route that is closest to s and the country that is holding the EU presidency in quarter t; (ii) $d_el_lowtrustEU(C=3)_{st}$: a dummy indicating whether any of the three countries nearest to the arrival point of the route that is closest to country s are holding elections in quarter t and are characterised by low levels of trust in the EU. Since we now rely on source country-time variation, we separately include source country and quarter fixed effects (rather than all their interactions as we did when estimating equation (7)). In order to capture country–specific variation in push factors over the period we study, we will also estimate specifications that condition on the logarithm of GDP per capita and a set of dummies for the five levels of the Political Terror Scale index (see Online Appendix B.1.3). We estimate equation (8) over the same sample used so far (top 15 source countries over the period 2009–2015) and the aggregation over entry routes reduces the number of observations to 420. Standard errors are clustered at the country level: since we are clustering standard errors using only 15 clusters, we deal with concern about the consistency of our standard errors by using wild-bootstrap (Cameron et al., 2008).

First Stage Estimates. Appendix Table A.4 reports first-stage estimates for our three alternative measures of border enforcement on, alternatively, $dist_EUpres_{st}$ (columns 1-2), $d_el_lowtrustEU(C=3)_{st}$ (columns 3-4) and both instruments jointly (columns 5-6). In even columns, we condition on country-level controls. While the coefficients on the instruments always have the expected sign, the estimates for $dist_EUpres_{st}$ are statistically significant only when enforcement is measured by the number of operations (Panel C). For budget (Panel A) or the number of days of operations (Panel B), $dist_EUpres_{st}$ appears to have no explanatory power neither when it is the only instrument (columns 1-2) nor when it is used jointly with $d_el_lowtrustEU(C=3)_{st}$ (columns 5-6). The latter variable is instead still a good predictor of border enforcement in this aggregated dataset, displaying significant coefficients and reasonably strong F-stats for all three measures. In the following analysis, we will thus exclusively use this second instrument.

the whole 2009–2015 period, this share was instead 59%. Alternative constructions of this country-specific measure of enforcement are tested in Online Appendix B.3.2.

Table 8: **Migrant Crossings and Enforcement, by Source Country (OLS and 2SLS estimates)**

	(1) OLS	(2) OLS	(3) 2SLS	(4) 2SLS
ln(budget_FXop)	0.021	0.024*	-0.038	-0.023
	[0.013]	[0.014]	[0.079]	[0.069]
Bootstrapped p-values:				
9,999 reps	0.139	0.0780	0.675	0.756
99,999 reps	0.144	0.0781	0.672	0.754
IV: KP F-stat			20.59	20.78
ln(days_FXop)	0.026	0.029	-0.058	-0.036
	[0.029]	[0.026]	[0.122]	[0.107]
Bootstrapped p-values:				
9,999 reps	0.394	0.284	0.675	0.755
99,999 reps	0.394	0.289	0.672	0.754
IV: KP F-stat			22.17	22.61
N_FXop	0.105	0.067	-0.221	-0.132
	[0.168]	[0.157]	[0.487]	[0.401]
Bootstrapped p-values:				
9,999 reps	0.560	0.675	0.685	0.760
99,999 reps	0.564	0.680	0.682	0.758
IV: KP F-stat			9.165	12.52
Observations	420	420	420	420
Country FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Country controls	No	Yes	No	Yes

*Note: The table reports OLS and 2SLS estimates of the effect of alternative enforcement measures on total attempted crossings by source country. Country controls are the logarithm of per capita GDP and a set of dummies for the five levels of the Political Terror Scale index. Country and year fixed effects are included in all regressions. Standard errors are clustered at the country of origin level: *** p<0.01, ** p<0.05, * p<0.1. Wild-bootstrapped p-values obtained with the STATA package boottest (Roodman et al., 2019) and different numbers of replications are reported below each estimate.*

OLS and 2SLS estimates. In Table 8, we report results from our OLS (columns 1-2) and IV (columns 3-4) estimates of α_1 in equation (8). We report estimates with and without yearly country-level controls (i.e. GDP per capita and dummies for the PTS). Regardless of the variable used to measure border enforcement and of the control variables included, OLS estimates are positive but small and generally imprecisely measured. IV point estimates are instead consistently negative, indicating – as expected – an upward bias in the OLS estimates. However, they are also small in magnitude and far from being statistically significant at any conventional level. Bootstrapped p-values reported in Table 8 confirm the lack of significance of our estimates. Taken at face value, the IV point estimates would imply that a 10% increase in enforcement leads to, at most, a 0.58% decrease in unauthorised border crossings (according to the estimates in column 3, when enforcement is measured with operation days).

In the Online Appendix B.3.2, we perform a number of robustness checks on the results reported in Table 8, varying the definition of enforcement by country of origin, the set of origin countries in the sample and the construction of the instrument. Further, we explore heterogeneity between "refugee-sending" and "non-refugee-sending" countries. None of these additional tests and specifications yield statistically significant deterrence effect. Based on these results, we fail to find evidence that border enforcement effectively deters overall illegal crossing attempts into Europe. When compared to the negative elasticities of migrant crossings to route enforcement estimated in our main route-level analysis (Section 5), these non-significant effects suggest that border control operations on specific routes primarily cause diversion across entry routes rather than deterring migrants from attempting illegal entry into Europe.

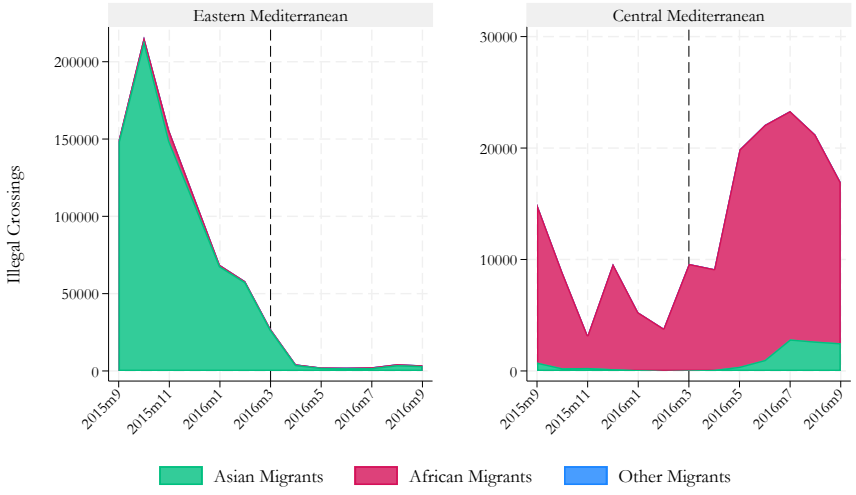
6.2 Externalizing Border Enforcement: the 2016 EU-Turkey Deal

In 2015, at the peak of the so–called "European refugee crisis", illegal crossings into the EU reached 1.8 million, and asylum applications hit 1.3 million (Figure 1). Most of these flows were composed by Syrian and Afghan citizens, who followed the Eastern Mediterranean and the Western Balkan routes to seek refuge in Europe (Appendix Figure A.1). The EU negotiated with the Turkish President Recep Erdogan an agreement to stop immigration into Europe through the Eastern Mediterranean route, which was signed on March 18, 2016 (see Section 2). The agreement required the Turkish government to tighten their border controls and host Syrian refugees in the Turkish territory, while the EU would bear the financial costs of these interventions.[19] The most recent estimate suggests that the EU has already transferred over €11.5 billion to Turkey (European Court of Auditors, 2024), which became the country hosting the largest population of Syrian citizens, with an estimated population of 3.6 million refugees in 2022 (Tumen, 2023). We visually inspect the effects of the "deal" on migrant crossings in Figure 4. The left panel shows that a drastic decrease in crossings through the Eastern Mediterranean route had already occurred during the winter months of 2015-16, well before the EU-Turkey deal, likely due to the adverse weather conditions. However, the expected surge in crossings in the spring and summer of 2016 did not materialise, suggesting that the agreement was effective in stemming

[19]Key provisions of the "deal" were: i) all undocumented migrants (including asylum seekers) crossing from Turkey to the Greek islands as of 20 March 2016 will be returned to Turkey; ii) for every Syrian being returned to Turkey from the Greek islands, another Syrian will be resettled to the EU; iii) Turkey will take any necessary measures to prevent new sea or land routes for irregular migration opening from Turkey to the EU. See: `https://www.consilium.europa.eu/en/press/press-releases/2016/03/18/eu-turkey-statement/`, last accessed on 27/02/2024.

unauthorised migrant flows towards the European Union. From a monthly average of almost 130 thousand attempts between September 2015 and February 2016, border crossings fell to 3 thousand per month in the semester following the "deal". Figure 4 also shows how this route closure affected almost exclusively migrants from Asian countries, who accounted for about 99% of detected attempts on the Eastern Mediterranean route. The right panel of Figure 4 focuses on the Central Mediterranean route, the second largest route of entry in Europe and the closest alternative to the Eastern Mediterranean one. The pattern of crossings on the former route follows a very distinct trend relative to the latter, displaying a sharp increase in the six months following the "deal". Such an increase in the spring and summer months may be entirely driven by seasonality: improved weather conditions reduce the death hazard of crossing the Mediterranean Sea, increasing the number of attempts. Nevertheless, the visible increase in Asian migrants using this route after March 2016 suggests that diversion of flows from the Eastern to the Central Mediterranean route may have occurred.[20]

Figure 4: Crossings on the Eastern and Central Mediterranean Routes (Sept. 2015 - Sept. 2016)



Note: The graph reports illegal crossing attempts detected on the Eastern Mediterranean (left panel) and Central Mediterranean (right panel) routes between September 2015 and September 2016, i.e. six months before and after March 2016, when the EU-Turkey deal was signed (March 18, 2016). The graphs distinguish migrants by origin areas: Asia, Africa, and other areas. The dashed vertical line identifies the start of the EU-Turkey deal. The scale of the vertical axis is different in the two graphs. Source: our elaboration on Frontex data.

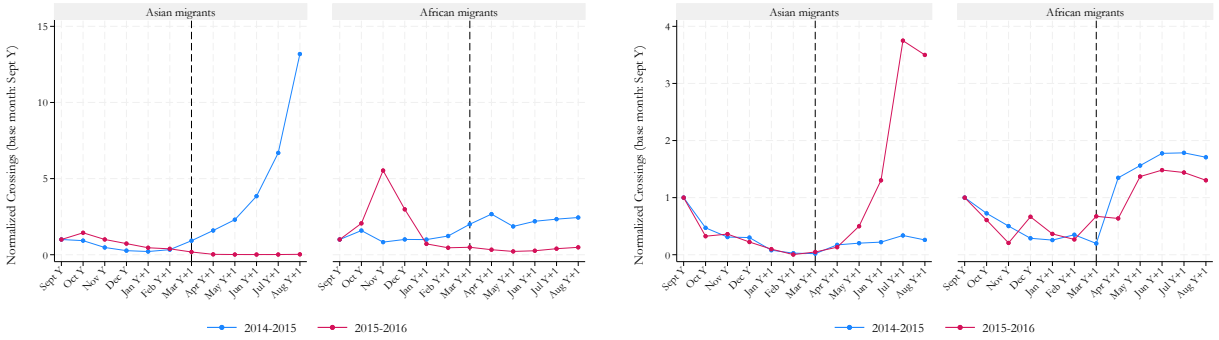
To formally evaluate the extent of a potential diversion effect from the Eastern to the Central Mediterranean route – and to distinguish it from seasonal patterns – we compare the change in crossings on both routes by Asian migrants before and after March 2016 with the same seasonal changes in the previous years. The identifying assumption is that, in the absence of the EU-Turkey

[20] Appendix Figure A.4 shows trends in crossings around the EU-Turkey deal on the other routes.

deal, the increases in crossings after March 2016 would have been the same as those observed in the same months in previous years. As a validation test, we repeat the same empirical exercise for African migrants: since they only marginally used the Eastern Mediterranean route before the "deal" (Figure 4), the closure of this route should produce negligible repercussions on their migration choices. Figure 5 graphically illustrates our approach. In Panel 5a, we show how unauthorised border crossings by Asian (left graph) and African (right graph) migrants on the Eastern Mediterranean route evolved between September 2015 and August 2016 (i.e., six months before and after the EU-Turkey deal of March 2016, red line) and for the same period one year earlier (between September 2014 and August 2015, blue line). The dashed vertical line identifies the March 2016 EU-Turkey deal and crossings are normalised to one in September of each year for both areas of origin. Panel 5b follows the same structure, displaying crossings through the Central Mediterranean route. The graph clearly shows that, in the months following the "deal", crossings through the East Mediterranean route remained close to zero for both Asian and African migrants, not showing the surge, which was particularly pronounced for Asian migrants, observed in the same period the year before. Coincidentally, we observe a sustained increase in crossings of Asian migrants on the Central Mediterranean route, considerably above the light seasonal surge in crossings experienced after March 2015. At the same time, for African migrants there is no clear deviations in seasonal patterns between 2015 and 2016 along the Central Mediterranean route.

Figure 5: Border Crossings on the Eastern and Central Mediterranean Routes (Sept.2014 - Sept.2016): Asian and African Immigrants

(a) Eastern Mediterranean Route (b) Central Mediterranean Route



Note: The graphs report illegal crossing attempts by Asian (left) and African (right) migrants detected on the Eastern Mediterranean (Panel a) and Central Mediterranean (Panel b) routes over the periods Sept. 2014 - Aug. 2015 (blue line) and Sept 2015 - Aug. 2016 (red line). For each area of origin and period, crossings are normalised to 1 in the base month of September. The dashed vertical line identifies the start of the EU-Turkey deal. Source: our elaboration on Frontex data.

After discussing the graphical evidence of Figure 5, we estimate the following equation:

$$\ln mig_m = b_0 + b_1 D(Apr - Sep)_m + \sum_{i=I}^{2016} b_2^i y_i_m + b_3 D(Apr - Sep)_m \times y_2016_m + \varepsilon_{rsm} \qquad (9)$$

where: mig_m is the number of crossings in month m; $D(Apr - Sep)_m$ is a dummy variable equal to one in the six months from April to September, which captures permanent differences in crossings in Spring/Summer relative to Autumn/Winter; y_i_m are year dummies which control for yearly shifts in crossings common to all months in each year. We estimate this equation using alternative time periods, with the starting year I alternatively chosen as 2012 or 2014, whereas the end year is always 2016. Our coefficient of interest is b_3, which measures the differential increase in log crossings in April-September 2016 relative to the same period in previous years. To examine dynamic effects, we further distinguish the first three months after the "deal" was signed (April-June 2016) from the following three months (July-September 2016). We estimate this equation separately for the Eastern Mediterranean and the Central Mediterranean route, and for migrants from Asian or African countries, hence identifying the effect from variation over time within each route and within each migrant origin group.[21]

Estimation results are reported in Table 9. We first focus on Asian migrants crossing through the East Mediterranean route (columns 1–5, Panel A). For the period 2014–2016, column (1) shows a negative and strongly significant estimate of the coefficient b_3, indicating that the EU-Turkey deal effectively curbed the number of crossings on the East Mediterranean route relative to the same period in previous years. This finding holds if we replace the $D(Apr - Sep)$ dummy with a series of individual month dummies (column 2) and when we split the after-*deal* period in two quarters ($D(Apr - Jun) \times y_2016$) and $D(Jul - Sept) \times y_2016$); column 3). These latter results suggest that the fall in total crossings relative to previous years was immediate, but became stronger in the following three months. Extending the observation period to include data for 2012 and 2013 leads to very similar estimates (columns 4–5). Columns 6–10 of Table 9 report estimates for Asian migrants attempting to enter the EU through the Central Mediterranean route. The first row of column 6 indicates significant seasonality effects, captured by the positive and precisely measured estimate for b_1, the coefficient on the April-September dummy. The estimated b_3 – reported on the second row – is positive throughout

[21] Our setting is not appropriate for a DiD design in which the Eastern Mediterranean route is considered the treated route and the Central Mediterranean the comparison route, because we expect to observe effects of the policy on the latter route due to diversion. Nor can we consider Asian migrants as the treatment and African migrants as the comparison group without making an untenable assumption of common trends in migration between the two origin groups.

all specifications and becomes significant at 5% level when we include month dummies to better model seasonality in crossings, regardless of the period considered in the analysis (columns 7 and 9). This coefficient indicates an increase in crossings of Asian citizens along the Central Mediterranean route after the signing of the EU-Turkey deal which did not occur in previous years, providing evidence for a *diversion effect*. Importantly, the results of columns 8 and 10 show that this diversion took some time to fully materialise: while the estimates for the coefficient on the April-June 2016 dummy are positive, they are not statistically significant at conventional levels. Instead, estimates for the coefficient on the July-September 2016 dummy are larger in magnitude and precisely estimated regardless of the years considered. Our estimates in column 2 imply that crossings on the East Mediterranean route decreased by 99.8% in the six months following the EU–Turkey deal relative to the same period in 2014–2015, confirming that the route had been almost completely shut down. At the same time, columns 6-10 show strong evidence of seasonality on the Central Mediterranean route: the estimate for b_1 in column 6 indicates that, on average, crossings during April-September in 2014-2015 were seven times as high as during the other six months of the year. The estimate of b_3 in column 7 indicates that in 2016 there was an additional 19-fold increase, leading to flows 26 times greater in April–September compared to Autumn–Winter months. According to these estimates, the diversion caused by the EU-Turkey deal explains 73% of the total monthly crossings of Asian migrants observed on the Central Mediterranean route between April and September 2016. The *deal* effect increased over time: the estimates of column 8 indicate for 2016 an additional sixfold increase in April-June (although imprecisely measured), and a further surge by a factor of 57 in the July-September trimester, on top of the usual seasonal increase in previous years. Thus, the EU-Turkey deal caused 46% of the observed crossings of Asian migrants on the Central Mediterranean route between April and June 2016, and almost 90% of those observed between July and September. Since in the latter quarter approximately 2,700 Asian citizens were detected on the Central Mediterranean route in each month, we can attribute 90% of those monthly crossings – i.e. 2.4 thousand – to diversion from the Eastern Mediterranean route. Which share of the Asian migrants who failed to enter the EU through the Eastern Mediterranean route after the EU-Turkey deal attempted to cross through the Central Mediterranean route? To quantify this deterrence effect, we would need to know the counterfactual flows of Asian migrants that we would have observed on the Eastern Mediterranean route in the absence of the policy. A reasonable – although highly imperfect – proxy is the average number of monthly attempts observed between July and September

in the previous two years (2014 and 2015), which is approximately 56 thousand. Based on the latter figure, we can conclude that about 4.5% of migrants were diverted toward the Central Mediterranean route by the EU-Turkey deal. The diversion effect may have further grown in the following months - following the trend observed in the first six months after the deal - although we are unable to estimate it.[22] It is also important to take into account that the policy we are considering entailed an almost complete closure of a route to the EU but also the possibility for Syrian refugees of remaining in a relatively safe and wealthy country such as Turkey. We may have observed a substantially greater diversion effect if Turkey had not retained millions of Syrian citizens.

One potential concern with the interpretation of the estimates of columns 6-10 in Panel A as the *diversion effect* caused by the shutdown of the East Mediterranean route is that there may have been other factors – coincidental with, but independent of, the EU-Turkey deal – leading to a greater facility of emigration along the Central Mediterranean route in the months immediately following March 2016.[23] In this case, we should observe an increase in the crossings on the Central Mediterranean route of migrants from African countries, who predominantly use this route (left Panel in Figure 4). In Panel B of Table 9, we replicate the same analysis for African countries. The negative and significant coefficients reported in columns 1-5 imply that the closure of the East Mediterranean route following the signing of the EU-Turkey deal halted also the few African migrants who were using it. However, this drop did not translate into a contemporaneous increase in crossings along the Central Mediterranean route (columns 6-10): if anything, the point estimates suggest that crossings of African migrants on the Central Mediterranean route may have rather *decreased* between April and September 2016 relative to the same period in previous years. This last set of estimates strongly supports the argument that the positive coefficients we estimate for Asian migrants on the same route are due to diversion effect. In the Online Appendix B.3.3, we show that our results are robust to the exclusion of any of the six main Asian origin countries, and to estimates based on data disaggregated by origin country (which allows us to work with a larger sample), rather than on data aggregated by route.

[22]Note that in 2017, Italy started a partnership with Libya to outsource sea operation in the Mediterranean Sea to the Libyan Coast Guard. This agreement – heavily criticised for human rights abuses and violence by Libyan officers against migrants – drastically modified crossing patterns in the Central Mediterranean route.

[23]Friebel et al. (2024), for instance, show that the sudden toppling of the Gaddafi regime in Libya in 2011 led to a substantial increase in crossings through the Central Mediterranean route. We were unable to identify any major political shocks occurring in Northern African countries after the signing of the EU-Turkey deal.

Table 9: **The Effects of the EU-Turkey Deal - Aggregate Crossings of Asian and African Migrants**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	East Mediterranean Route					Central Mediterranean Route				
Panel A: Asian countries										
(Apr-Sep)	0.680					1.999***				
	[0.990]					[0.354]				
(Apr-Sep)*y2016	-3.860***	-6.175***		-4.995***		2.349	2.962**		2.551**	
	[1.004]	[0.498]		[0.506]		[1.591]	[1.264]		[1.135]	
(Apr-Jun)*y2016			-5.474***		-4.544***			1.866		1.977
			[0.580]		[0.563]			[1.310]		[1.204]
(Jul-Sep)*y2016			-6.875***		-5.446***			4.058**		3.124***
			[0.321]		[0.475]			[1.265]		[1.127]
Panel B: African countries										
(Apr-Sep)	-0.414					1.384***				
	[0.489]					[0.276]				
(Apr-Sep)*y2016	-0.129	-1.314***		-1.091***		-0.072	-0.352		-1.454	
	[0.535]	[0.296]		[0.232]		[0.331]	[0.280]		[0.902]	
(Apr-Jun)*y2016			-1.461***		-1.175***			-0.397		-1.289
			[0.298]		[0.247]			[0.348]		[0.939]
(Jul-Sep)*y2016			-1.167***		-1.006***			-0.307		-1.620*
			[0.333]		[0.265]			[0.281]		[0.923]
Observations	23	23	23	47	47	23	23	23	47	47
Start year	2014	2014	2014	2012	2012	2014	2014	2014	2012	2012
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

*Note: Panel A reports results from regressions of log monthly crossings of Asian migrants on the East (col. 1-5) or Central (col. 6-10) Mediterranean routes on a dummy for months April to September ("post", col. 1 and 6) or month dummies (other columns), year dummies and the interaction of the "post" dummy with a dummy for year 2016. In columns 3, 5, 8 and 10 the "post" dummy is split into a dummy for April-June and a dummy for July-September. Panel B reports the same estimates for African migrants. Observations cover the period Oct. 2014-Sept. 2016 (col. 1-3 and 6-8) or Oct. 2012 - Sept. 2016 (col. 4-5 and 9-10). The observations for March 2016 - the month in which the EU-Turkey deal was signed - are dropped in all regressions. Robust standard errors in parenthesis: *** p<0.01, ** p<0.05, * p<0.1.*

7 Conclusions

In recent years, EU migration policies have placed strong emphasis on border security and the externalisation of controls to third countries. This strategy aims to curb unauthorised inflows and address public discontent with migration, which fuels far-right and eurosceptic movements, threatening EU cohesion and survival. But are these expectations justified? The results of the quantitative evaluation of enforcement policies at the EU external borders provided in this paper can inform this debate.

Our analysis first uncovers a political cycle in EU enforcement investment, driven by conflicting interests among Member States. Rather than reflecting a coordinated strategy, enforcement intensity varies by route in response to domestic political incentives, resulting in fragmented and route-specific interventions that may temporarily benefit some member states while undermining overall policy effectiveness. We then assess the effectiveness of EU border operations. While enforcement on a given route reduces unauthorised crossings along that same route, the impact is economically small and concentrated on land borders. We find no significant effect on sea routes, nor evidence of an "attraction effect" from naval operations, challenging claims that such efforts encourage migration by making sea crossings safer. Additionally, we show that asylum seekers from conflict-affected countries are less responsive to enforcement than migrants from more stable regions. This latter finding should not suggest, however, that border enforcement policies are able to effectively and fairly discriminate refugees from economic migrants. As tragically evidenced by nearly 30 thousand recorded deaths in the Mediterranean Sea since 2014 (IOM, 2024), those unable to remain in their home countries respond to stricter enforcement by facing higher costs and greater risks. Crucially, we find no significant deterrence effect on overall migration, suggesting that border enforcement primarily diverts flows across routes.

Taken together – and acknowledging the challenges of such a comparison – our findings suggest that enforcement decisions are more responsive to political cycles than migrant crossings are to enforcement. In other words, shifting border policies appears easier than altering migration patterns. EU Member States seem to be competing to stretch a blanket too short to cover them all, without addressing two key questions: (i) Which outcomes can border enforcement realistically achieve? (ii) Would greater coordination improve its effectiveness? Our analysis answers the first: current enforcement has limited impact. The second remains open, though our evidence suggests that coordination could help.

Finally, our paper provides the first quantitative evaluation of border enforcement externalisation

by analysing the 2016 EU-Turkey deal. While the agreement effectively sealed the targeted route, it also caused significant diversion to alternative entry points, limiting its overall impact. Notably, much of the its success in curbing refugee inflows stemmed from allowing over 3.5 million Syrians to remain in Turkey with EU-funded support. By contrast, externalisation agreements focused solely on tightening border controls – such as those with Libya, a country torn by civil war and controlled by militias, or Tunisia, where the president is openly hostile toward migrants – are likely to be far less effective and cause greater diversion. In these cases, deterrence seems to rely on human rights violations and criminal violence, including rape, torture, and abandonment in the desert (Amnesty International, 2020; United Nations, 2022; European Ombudsman, 2024) – methods that are not only ethically and politically unacceptable for the EU but also counterproductive, as they hinder the future integration of refugees who still manage to reach Europe (Freitas-Monteiro and Ludolph, 2025). More broadly, externalisation carries significant political costs: deals with authoritarian leaders undermine the EU's credibility in foreign policy and increase its vulnerability to political blackmail. This was evident when Turkish President Erdoğan threatened to *"open our borders and send 3.6 million refugees your way"* in response to EU criticism of Turkey's military actions in northern Syria.[24]

Thinking about alternatives, although our estimates suggest that border enforcement is effective in reducing flows, its impact seems limited. This implies that allocating more resources toward border controls will not make a major difference in terms of undocumented migration reduction. Given the substantial costs of these policies, it is worth asking whether public funds could be better spent elsewhere. A key objective of immigration enforcement is to address public concerns about security. However, could these concerns be more effectively mitigated by investing in immigrant integration programs or strengthening the social safety net for all citizens? Such measures could ease public anxieties while also enhancing economic and social efficiency.

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[24]See `https://www.reuters.com/article/us-syria-security-turkey-europe-idUSKBN1WP1ED`, last accessed on 27/02/2024.

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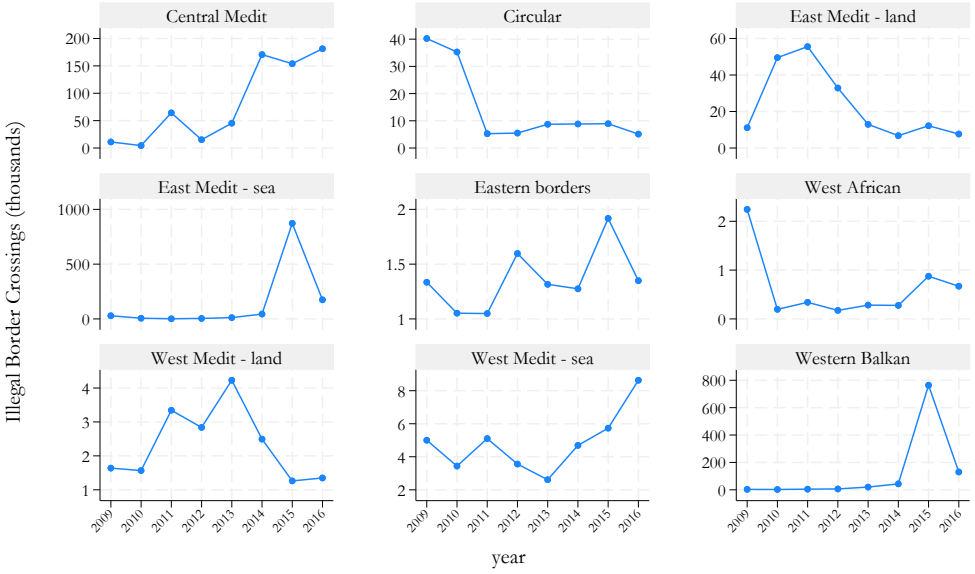
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A Appendix

A.1 Appendix Figures

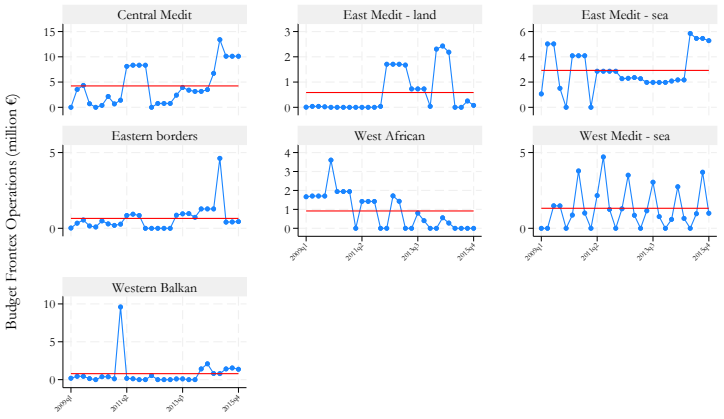
Figure A.1: Illegal Border Crossings, by Entry Route (2009-2016)



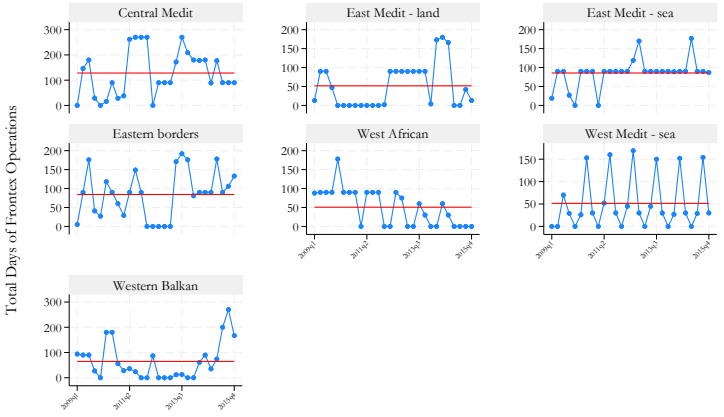
Note: The graph reports yearly illegal border crossing by entry route between 2009 and 2016. Source: our elaboration on Frontex data.

Figure A.2: **Frontex Joint Operations: Budget, Number of Days and Number of Operations; by route (2009-2015)**

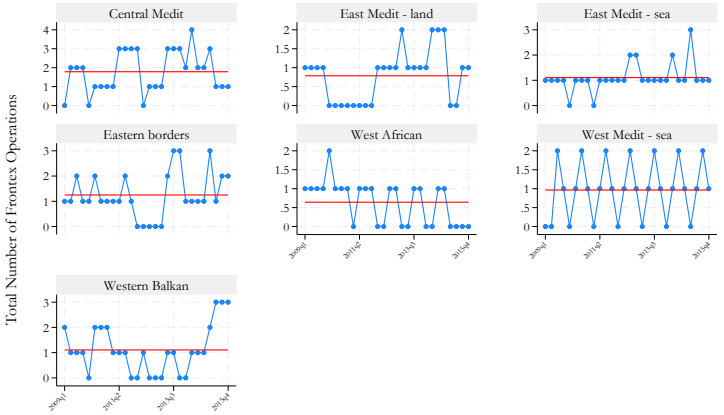
(a) Budget (Million EUR)



(b) Number of Days



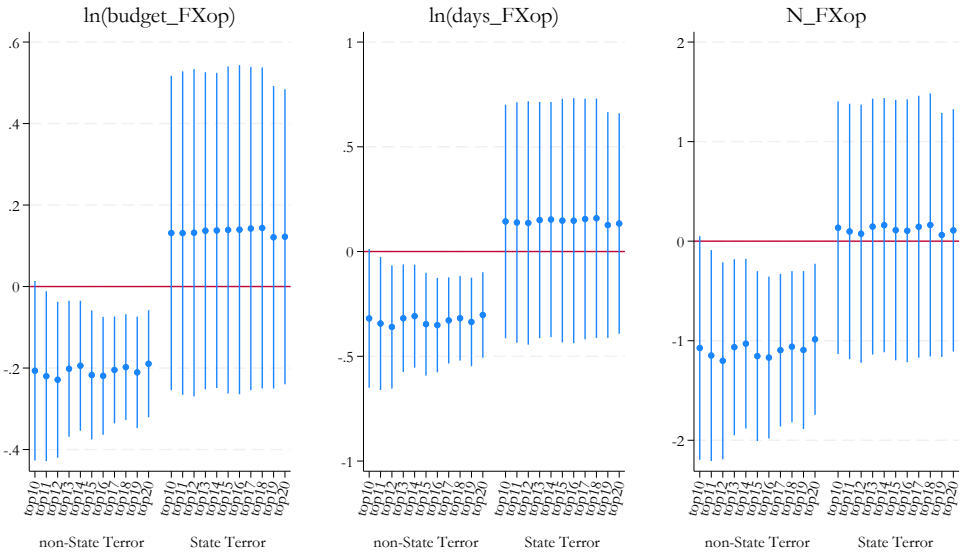
(c) Number of Operations



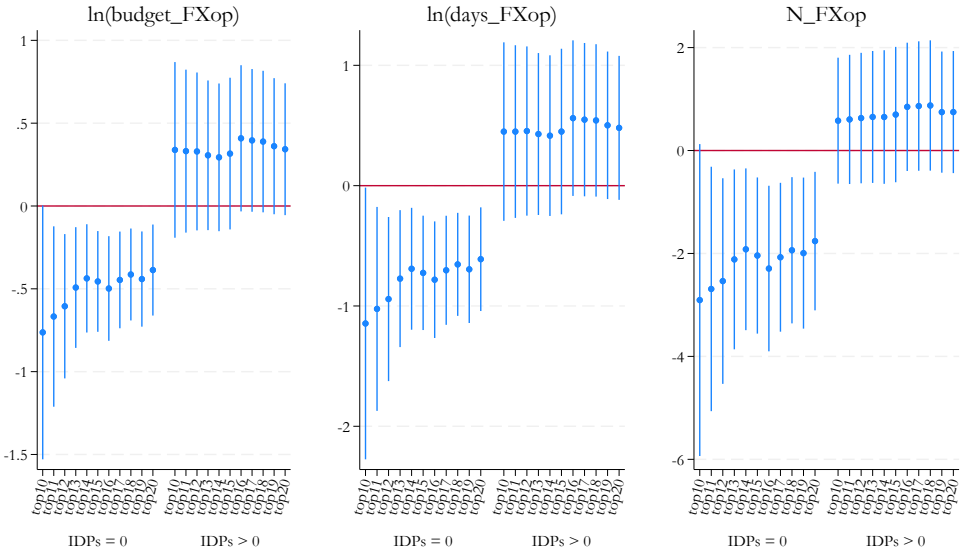
Note: For each border enforcement indicator and each route, the graphs report quarterly data for the period January 2009 to December 2015. The horizontal lines (in red) display the route-specific average over the period considered. Source: our elaboration on Frontex data.

Figure A.3: **Migrant Crossings and Enforcement (2SLS estimates) - Refugees and Economic Migrants - Source Countries: top10-top20**

(a) **State Terror**

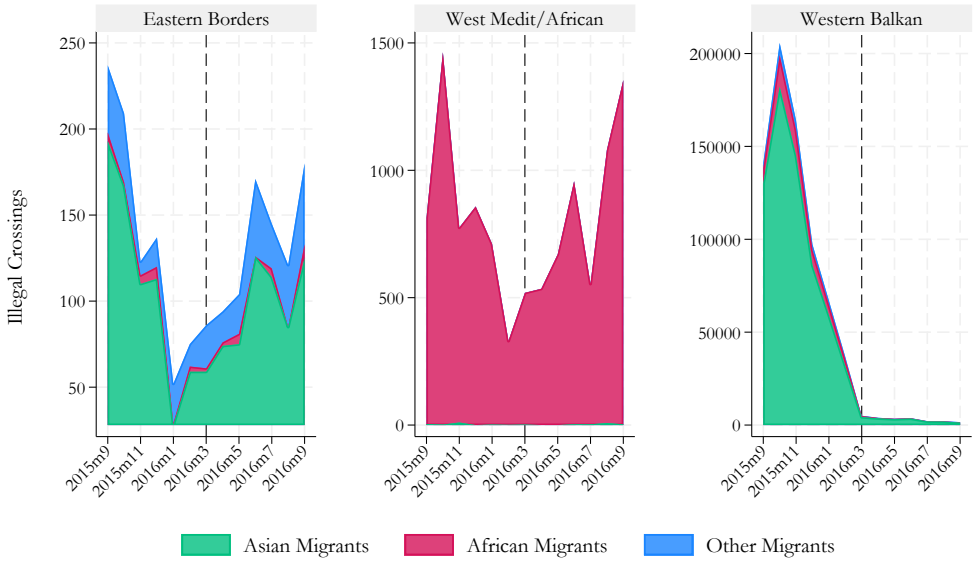


(b) **IDPs**



Note: The figures report 2SLS estimates (and 95% confidence intervals) of log migrant crossings on three alternative measures of enforcement ($ln(budget_FXop)$, $ln(days_FXop)$ and N_FXop) interacted with, in Panel a, indicator variables that identify source countries that are not considered Terror States ("non-Terror State") and those that are Terror States ("Terror State") in each quarter, and, in Panel b, indicator variables that identify source countries that have zero IDPs ("no IDPs") and those with a positive number of IDPs ("IDPs>0 ") in each quarter (according to UNHCR records). We instrument enforcement with the distance from the current EU presidency (interacted with the indicator variables for "Terror States" or IDPs as appropriate). We report estimates for a number of source countries varying from 10 to 20 (our main estimating sample comprises 15 source countries). A full set of fixed effects is included in all regressions. Standard errors are clustered at the area of origin-route level.

Figure A.4: Border Crossings: Other Routes (Sept. 2015 - Sept. 2016)



Note: The graph reports illegal crossing attempts detected on the Eastern Borders route (left panel), West Mediterranean and West African route (central panel) and Central Mediterranean route (right panel) between September 2015 and September 2016. The vertical line signs the start of the EU-Turkey deal (signed on March 18, 2016). The graphs distinguishes migrants by origin areas: Asia, Africa and other areas. Source: our elaboration on Frontex data.

A.2 Appendix Tables

Table A.1: **Illegal Border Crossings: Main 15 Nationalities (2009-2015)**

Country of Origin	IBCs	Share
Syrian Arab Republic	870723	.34
Afghanistan	596415	.23
Iraq	152590	.06
Pakistan	119758	.05
Albania	113783	.04
Eritrea	96781	.04
Kosovo	65878	.03
Somalia	57248	.02
Nigeria	51428	.02
Bangladesh	42682	.02
State of Palestine	42081	.02
Tunisia	39138	.02
Algeria	37131	.01
Iran (Islamic Republic of)	34459	.01
Morocco	29429	.01
Top 15 Nationalities	2349524	.92

Note: elaborations from Frontex data. Period: 2009-2015.

Table A.2: **EU Presidency Rotation (2009-2016)**

EU Country	Year	Semester
Czech Republic	2009	JanJun
Sweden	2009	JulDec
Spain	2010	JanJun
Belgium	2010	JulDec
Hungary	2011	JanJun
Poland	2011	JulDec
Denmark	2012	JanJun
Cyprus	2012	JulDec
Ireland	2013	JanJun
Lithuania	2013	JulDec
Greece	2014	JanJun
Italy	2014	JulDec
Latvia	2015	JanJun
Luxembourg	2015	JulDec
Netherlands	2016	JanJun
Slovakia	2016	JulDec

Note: the table reports the EU member countries that held the presidency of the Council of the EU between 2009 and 2016.

Table A.3: **First Stage: Route Enforcement and Distance from EU Presidency - Robustness and Heterogeneity**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ln(budget_FXop)			**ln(days_FXop)**			**N_FXop**		
dist_EUpres	-1.243***	-0.335***	-0.504***	-0.728***	-0.251***	-0.289***	-0.136***	-0.135***	-0.090**
	[0.282]	[0.089]	[0.150]	[0.185]	[0.068]	[0.103]	[0.029]	[0.038]	[0.036]
dist_EUpres * external borders		-1.047***			-0.468***			0.034	
		[0.122]			[0.094]			[0.047]	
dist_EUpres * LTU (Jul-Dec 2013)			0.256			0.122			-0.095
			[0.288]			[0.208]			[0.096]
dist_EUpres * GRC (Jan-Jun 2014)			-1.952***			-1.212***			-0.191**
			[0.595]			[0.399]			[0.095]
Observations	2,100	2,940	2,940	2,100	2,940	2,940	2,100	2,940	2,940
Period	2009-13	2009-15	2009-15	2009-13	2009-15	2009-15	2009-13	2009-15	2009-15
Route-Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IV: KP F-stat	19.49	36.89	23.25	15.48	17.26	17.53	21.24	8.036	7.403

*Note: The table reports first stage estimates of alternative enforcement measures on the instrument dist_EUpres (i.e. the linear distance between route r and the country holding the EU presidency in quarter t) and a full set of fixed effects. In columns 2, 5, and 8, we further include the interaction of our instrument with an indicator dummy that identifies EU countries at the external borders (Spain, Italy, Greece, Hungary, and Malta). In columns 3, 6, and 9, we include interactions of the instrument with indicator variables for the Lithuanian and Greek EU presidency. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin–route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

Table A.4: **Migrant Crossings and Enforcement, by Source Country - First Stage Regressions: EU Presidency and National Elections**

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: ln(budget_FXop)					
dist_EUpres	-0.039	-0.038			-0.090	-0.101
	[0.136]	[0.135]			[0.143]	[0.134]
d_el_lowtrustEU (C=3)			1.599***	1.579***	1.608***	1.592***
			[0.346]	[0.340]	[0.342]	[0.334]
IV: KP F-stat	0.0843	0.0793	21.41	21.62	13.31	16.27
	Panel B: ln(days_FXop)					
dist_EUpres	-0.081	-0.079			-0.114	-0.120
	[0.106]	[0.101]			[0.111]	[0.101]
d_el_lowtrustEU (C=3)			1.031***	1.025***	1.043***	1.041***
			[0.215]	[0.212]	[0.212]	[0.207]
IV: KP F-stat	0.586	0.606	23.05	23.52	15.13	19.66
	Panel C: N_FXoP					
dist_EUpres	-0.105***	-0.105***			-0.114***	-0.117***
	[0.035]	[0.032]			[0.038]	[0.032]
d_el_lowtrustEU (C=3)			0.272***	0.278***	0.284***	0.294***
			[0.088]	[0.077]	[0.090]	[0.078]
IV: KP F-stat	8.927	11.04	9.529	13.03	7.803	15.34
Observations	420	420	420	420	420	420
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country controls	No	Yes	No	Yes	No	Yes

*Note: Each panel of the table table reports first stage estimates of alternative enforcement measures on the EU presidency instrument (columns 1,2) on the national elections instrument (presence of an election in closest 3 countries if Eurosceptic, columns 3-4) and on both instruments jointly (columns 5-6). Country-level controls are the logarithm of per capita GDP and a set of dummies for the five levels of the Political Terror Scale index. Country and year fixed effects are included in all regressions. Standard errors are clustered at the country of origin level: *** p<0.01, ** p<0.05, * p<0.1.*

B Online Appendix

B.1 Data and Measurement

B.1.1 Migratory Routes of Entry in the European Union

Frontex classifies Illegal Border Crossings (IBCs) along the following nine routes (see Online Appendix Figure B.1):

1. *Central Mediterranean*: This route refers to the migratory flow coming from Northern Africa towards Italy and Malta through the Mediterranean Sea. It also includes flows from Turkey and Egypt and the migratory movements between Greece and Italy, which are sometimes coded as belonging to a separate Apulia and Calabria route.

2. *Circular route from Albania to Greece*: Circular irregular migration across the land border between Greece and Albania was, for many years, one of the most significant irregular migratory flows across the EU's external borders. Since 2010, when Albanian nationals were granted visa-free travel to the European Union, this route has substantially decreased its importance.

3. *Western Mediterranean - land*: This route is defined as the land route from North Africa to the Iberian Peninsula through the Spanish enclaves of Ceuta and Melilla.

4. *Western Mediterranean - sea*: This route is defined as the sea passage from North Africa to the Iberian Peninsula

5. *Eastern Mediterranean - sea*: The Eastern Mediterranean route is defined as the passage used by migrants crossing through Turkey to the European Union via Greece, southern Bulgaria or Cyprus.

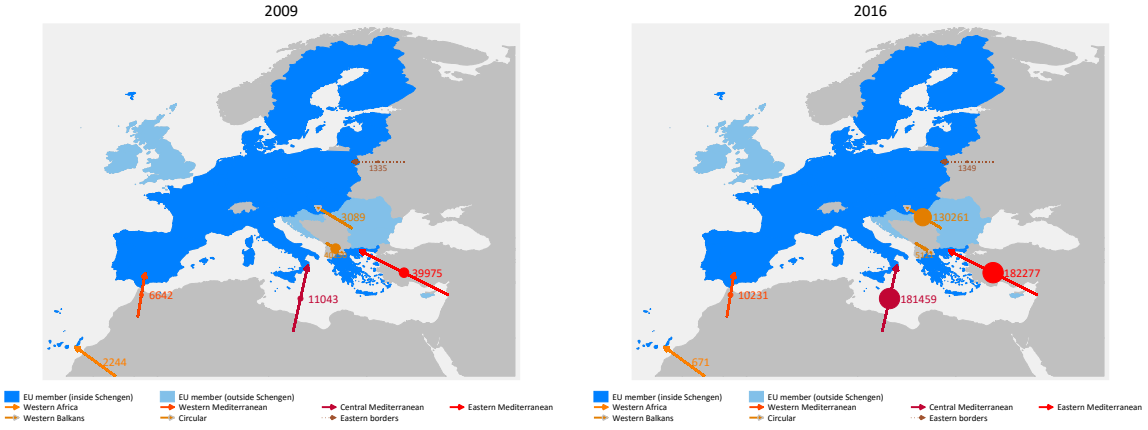
6. *Eastern Mediterranean - land*: The Eastern Mediterranean route is defined as the passage used by migrants crossing through Turkey to the European Union via Greece, southern Bulgaria or Cyprus.

7. *Western Balkan*: The Western Balkan route describes two main migratory flows: from the Western Balkan countries themselves, and the secondary movements of mainly Asian migrants who originally entered the European Union through the Bulgarian-Turkish or Greek-Turkish land or sea borders and then proceed, through the Western Balkans, into Hungary.

8. *Eastern Borders*: This route refers to the European Union's 6,000 km long land border between Belarus, Moldova, Ukraine, the Russian Federation and its eastern Member States (Estonia, Finland, Hungary, Latvia, Lithuania, Norway, Poland, Romania and Slovakia).

9. *Western African*: The Western African route is defined as the sea passage from West African countries, mainly Senegal and Mauritania, into the Canary Islands.

Figure B.1: **Migratory Entry Routes and Illegal Border Crossings (2009 and 2016)**



Note: The figure displays the main migrant entry routes into the EU identified by Frontex and the number of illegal border crossings (IBCs) detected in 2009 (left panel) and in 2016 (right panel).

B.1.2 National Enforcement: Eurostat Indicators

Eurostat (Enforcement of Immigration Legislation: *migr_eil* - link) provides bilateral host-source country yearly data on four measures of national enforcement:

1. apprehensions: Number of non-EU citizens found to be illegally present in the most affected EU Member States;

2. ordered to leave: non-EU citizens were issued with an order to leave an EU Member State;

3. refused entry: non-EU citizens refused entry at the external borders;

4. returned: non-EU citizens returned following an order to leave.

We use these data to compute three alternative indexes of national enforcement for each source country and destination country in EU:

1. $enforc_index_1$ = returned/ordered to leave;

2. $enforc_index_2$ =(returned + refused entry at the border) / (ordered to leave + refused entry at the border + illegally present);

3. $enforc_index_3$ = ordered to leave + refused entry at the border) / (ordered to leave + refused entry at the border + illegally present).

For each index, we then compute the average of national enforcement in the three closest arrival countries for each route and include it in our main IV regressions. We use these indexes as additional controls in the robustness checks reported in Online Appendix Table B.4. Admittedly, these three indices are built using equilibrium outcomes of the enforcement process and do not exclusively reflect changes in the supply side (differently from our Frontex enforcement variables).

B.1.3 Identifying Refugee Source Countries

In the empirical analysis, we identify refugee source countries in our sample by using the Political Terror Scale (PTS) and UNHCR records on Internally Displaced People (IDPs).

Political Terror Scale (PTS). The PTS measures the level of political violence and terror a country experiences in a given year using a five-level terror scale (Wood and Gibney, 2010). This index is compiled from three primary sources: Amnesty International's annual country reports, the U.S. State Department's Country Reports on Human Rights Practices, and Human Rights Watch's World Reports. The five levels of the terror scale are:

1. **Level 1**: Countries under a secure rule of law, where individuals are not imprisoned for their views, and torture is rare or exceptional. Political murders are extremely rare.

2. **Level 2**: There is a limited amount of imprisonment for nonviolent political activity. However, torture and beatings are exceptional, and political murder is rare.

3. **Level 3**: There is extensive political imprisonment, and political murders and disappearances occur occasionally. However, terror does not affect large segments of the population.

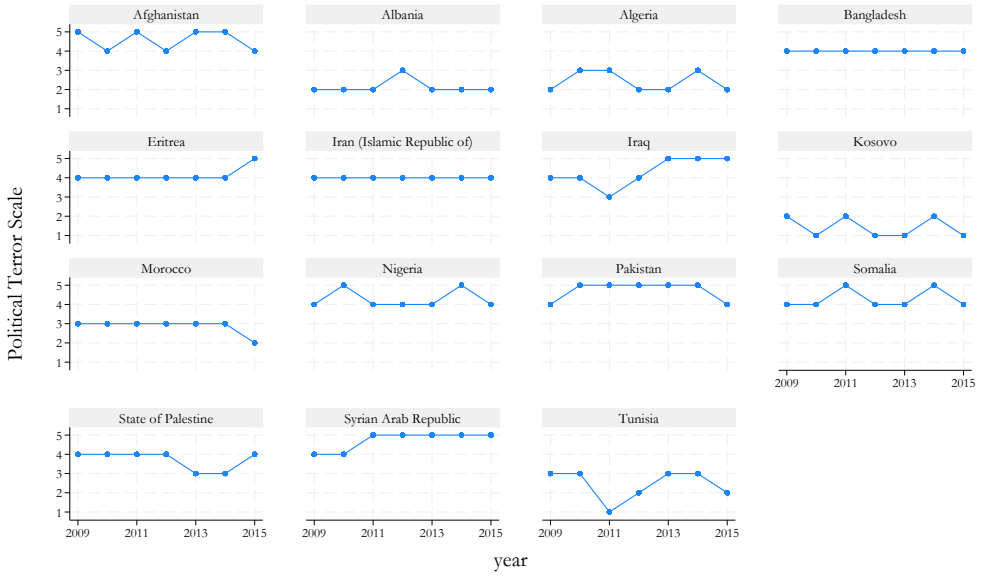
4. **Level 4**: Civil and political rights violations are widespread. Political imprisonment is common, and executions, disappearances, and torture occur frequently, often targeting those suspected of

opposing the government.

5. **Level 5**: Terror affects the entire population. The regime allows for unlimited imprisonment, execution, and torture, often carried out by the leadership and/or associated groups without any legal constraints or limits.

In our analysis, we define "Terror States" countries that reach level 5 of the PTS index. Online Appendix Figure B.2 show the cross-sectional and within-country variation in the PTS index among the top 15 sending countries in our sample. Over the period 2009-2015, seven states (Afghanistan, Eritrea, Iraq, Nigeria, Pakistan, Somalia and Syria) have reached the level of "Terror State" in at least one year.

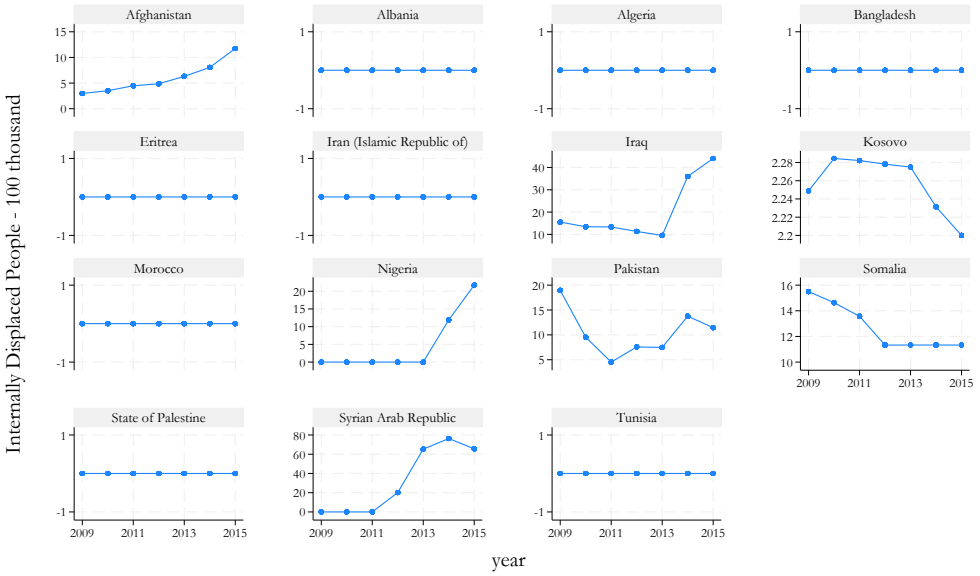
Figure B.2: **Political Terror Scale in the Top 15 Source Countries (2009-2015)**



Note: The figure report the PTS index between 2009 and 2015 for the top 15 source countries in our main estimation sample.

UNHCR records on IDPs. The United Nations High Commissioner for Refugees (UNHCR) provides yearly data on Internally Displaced People (IDPs) by country of residence. IDPs are defined as individuals who have been forced to flee their homes by conflict, violence, persecution or disasters, however, unlike refugees, they remain within their own country. In our analysis, we define "refugee countries" those countries in our sample which host a positive number of IDPs. Online Appendix Figure B.3 reports the evolution of IDPs in the top 15 source countries in our main estimation sample.

Figure B.3: **IDPs in the Top 15 Source Countries (2009-2015)**



Note: The figure report UNHCR records on IDPS between 2009 and 2015 for the top 15 source countries in our main estimation sample.

B.1.4 Eurobarometer

Since the early 1970s, the European Commission conducts the Standard Eurobarometer to survey public opinion in EU Member States. Conducted biannually with repeated cross-sectional samples, it tracks attitudes toward European unification, institutions, and policies, alongside socio-political views and demographic data. Periodically, the survey explores special topics such as the environment, technology, health, and social exclusion. To obtain the measure of Euroscepticism that we use in constructing our elections IV (see Section 4.3), we rely on the following question: "*How much trust do you have in certain institutions? For each of the following institutions, do you tend to trust it or tend not to trust it? The European Union*". We compute the share of respondents who reported low trust in the EU and define eurosceptic countries as those where that share is above the EU average (which is approximately 50% in the period we consider in our analysis).

B.2 Measurement Issues: Detected and Actual Crossings

Since undocumented inflows are unobservable, we use detected crossing attempts as a proxy for actual flows. This Section discuss under which assumptions the effect of enforcement on detected attempts can be informative about the effect on underlying attempts. In their analysis of U.S. border enforcement, (Hanson and Spilimbergo, 1999) provide a formal discussion of this measurement issue. Our argument builds on theirs.

Suppose we want to estimate the impact of a vector X of possible determinants on the unauthorised inflow of immigrants. Ideally, we could run the following regression:

$$mig_t = X_t\beta + u_t \tag{B.1}$$

where mig_t is the total number of migrants attempting to unlawfully enter the EU. Total migration attempts can be detected (mig_t^D) or undetected (mig_t^U):

$$mig_t = mig_t^D + mig_t^U \tag{B.2}$$

The number of detected migration attempts mig_t^D is:

$$mig_t^D = p_t^D \times mig_t \tag{B.3}$$

where p_t^D is the probability of being detected and mig_t is the total number of migration attempts.

Elasticity of detected migration attempts to a pull or a push factor. We take logs of equation (B.3):

$$\ln mig_t^D = \ln p_t^D + \ln mig_t \tag{B.4}$$

If we assume that the probability of detection exclusively – and positively – depends on the level of enforcement enf_t:

$$p_t^D = p(enf_t) \tag{B.5}$$

with $p(enf_t)' > 0$, then the elasticity of detected migration attempts to a pull/push factor X_t is exactly equal to the elasticity of overall migration attempts:

$$\frac{\partial \ln mig_t^D}{\partial \ln X_t} = \frac{\partial \ln mig_t}{\partial \ln X_t} \tag{B.6}$$

If, perhaps more realistically, we assume instead that the probability of detection positively depends on the level of enforcement and negatively on the number of migration attempts (i.e., more attempts reduce the individual probability of being detected):[1]

$$p_t^D = p(enf_t, mig_t) \tag{B.7}$$

with: $\frac{\partial \ln p_t^D}{\partial \ln enf_t} > 0$ and $\frac{\partial \ln p_t^D}{\partial \ln mig_t} < 0$, then, the elasticity of detected migration attempts to a pull/push factor X_t is:

$$\frac{\partial \ln mig_t^D}{\partial \ln X_t} = \frac{\partial \ln p_t^D}{\partial \ln mig_t}\frac{\partial \ln mig_t}{\partial \ln X_t} + \frac{\partial \ln mig_t}{\partial \ln X_t} = \left(1 + \frac{\partial \ln p_t^D}{\partial \ln mig_t}\right)\frac{\partial \ln mig_t}{\partial \ln X_t} \tag{B.8}$$

It is hard to imagine any push/pull factor X_t that could increase the number of detected migrants while reducing the number of total migration attempts or vice versa. Hence, it must be that:

$$sign\left(\frac{\partial \ln mig_t^D}{\partial \ln X_t}\right) = sign\left(\frac{\partial \ln mig_t}{\partial \ln X_t}\right) \tag{B.9}$$

which implies: $0 \leq \left(1 + \frac{\partial \ln p_t^D}{\partial \ln mig_t}\right) \leq 1$ (under the assumption that $\frac{\partial \ln p_t^D}{\partial \ln mig_t} < 0$). Hence, the elasticity of detected attempts to a pull/push factor X_t provides a lower bound for the elasticity of overall migration attempts:

$$\frac{\partial \ln mig_t^D}{\partial \ln X_t} \leq \frac{\partial \ln mig_t}{\partial \ln X_t} \tag{B.10}$$

Summarizing, the elasticity of detected migration attempts to a pull/push factor X_t is highly informative about the elasticity of total migration attempts: depending on the assumptions one makes on the determinant of the detection probability, the former elasticity exactly identifies – or provides a lower bound for – the latter.

[1] According to Hanson and Spilimbergo (1999), indeed: "it is difficult to imagine conditions under which, for constant enforcement, more attempts to cross the border increase the likelihood that an individual migrant is caught." (p. 1354).

Elasticity of detected migration attempts to changes in enforcement. The elasticity of detected migration attempts to enforcement is:

$$\frac{\partial \ln mig_t^D}{\partial \ln enf_t} = \frac{\partial \ln p_t^D}{\partial \ln enf_t} + \frac{\partial \ln p_t^D}{\partial \ln mig_t}\frac{\partial \ln mig_t}{\partial \ln enf_t} + \frac{\partial \ln mig_t}{\partial \ln enf_t} = \tag{B.11}$$

$$= \frac{\partial \ln p_t^D}{\partial \ln enf_t} + \left(1 + \frac{\partial \ln p_t^D}{\partial \ln mig_t}\right)\frac{\partial \ln mig_t}{\partial \ln enf_t} \tag{B.12}$$

Note that $\frac{\partial \ln p_t^D}{\partial \ln enf_t}$ is the direct effect of enforcement on the probability of being detected. This *detection effect* must be positive. The term $\frac{\partial \ln mig_t}{\partial \ln enf_t}$ is instead the *deterrence effect*, that is, the effect of changes in enforcement on illegal migration attempts. This effect is expected to be negative if the enforcement succeeds in deterring further migration. Finally, as discussed in the previous Section, we expect the term $\left(1 + \frac{\partial \ln p_t^D}{\partial \ln mig_t}\right)$ to be positive and to vary between zero and one.

Hence, we can draw two conclusions. First, to the extent that a deterrence effect exists, the elasticity of detected migration attempts to enforcement underestimates the detection effect of enforcement:

$$\frac{\partial \ln mig_t^D}{\partial \ln enf_t} < \frac{\partial \ln p_t^D}{\partial \ln enf_t} \tag{B.13}$$

Intuitively, in the presence of deterrence, more enforcement will lead to lower illegal migration attempts and hence lower apprehensions. Second, the elasticity of detected attempts to enforcement provides an upper bound for the deterrence effect of enforcement:

$$\frac{\partial \ln mig_t^D}{\partial \ln enf_t} > \frac{\partial \ln mig_t}{\partial \ln enf_t} \tag{B.14}$$

Therefore, if the detection effect dominates, the elasticity of detected migration attempts will be positive, regardless of whether the actual deterrence effect is positive, negative, or zero. However, if the elasticity of detected attempts to enforcement is negative, then we can be sure that the elasticity of actual attempts is negative and thus that the deterrence effect is at work.

B.3 Robustness Checks and Further Results

In this Section, we report estimation results from robustness checks and extensions of the empirical analysis presented in the paper. In particular, results presented in Section B.3.1 refer to our main analysis of migrant crossing and enforcement at the route level (see Section 5). In Section B.3.2, we discuss additional evidence on the aggregate analysis at the source-country level (see Section 6.1). Finally, further results on the effects of the EU-Turkey deal (see Section 6.2) are reported in Section B.3.3.

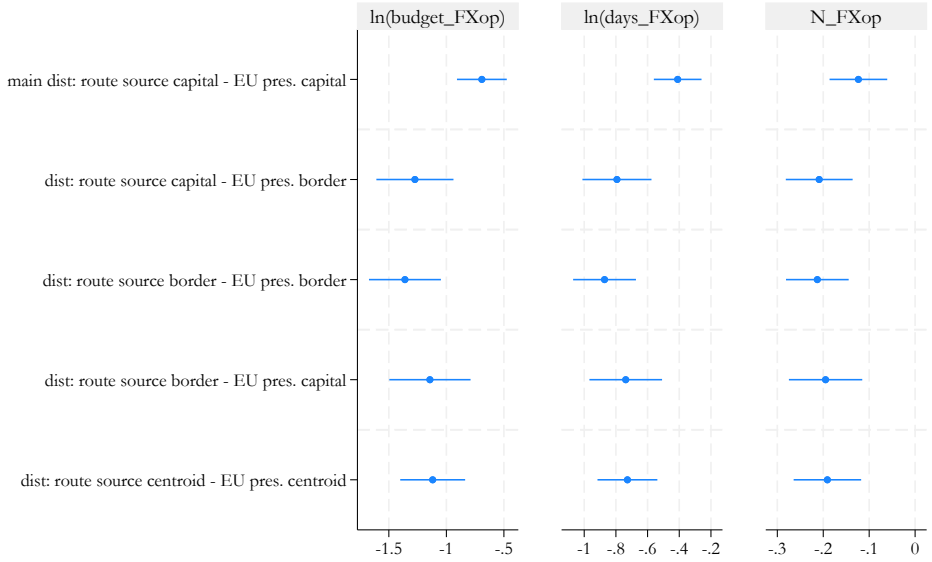
B.3.1 Migrant Crossings and Enforcement: Route-Level Analysis

In the following paragraphs, we test the robustness of the main findings presented in Section 5 by performing a series of empirical checks.

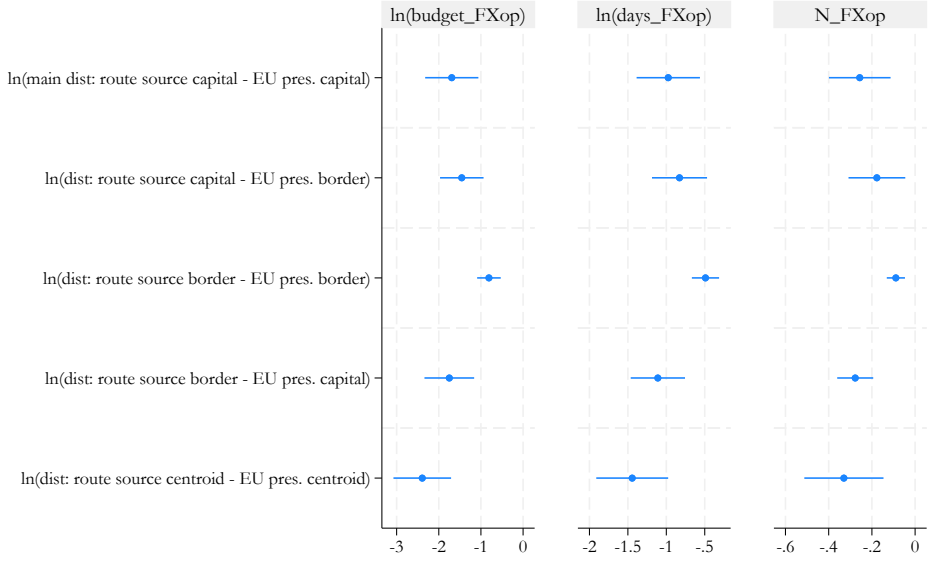
First Stage Regressions: Alternative Measures of Distance from the EU Presidency. We examine the sensitivity of our first stage regressions to alternative definitions of distance between routes and the countries holding the EU presidency. Our main analysis utilises the linear distance between the starting country's capital and the capital city of the EU president state. For each of our three measures of border enforcement, in Online Appendix Figure B.4a we report estimated coefficients for the following alternative IVs: (i) *capital to capital*: our main IV (as reported in Table 3); (ii) *capital to border*: distance from capital in source country to nearest border of EU country holding the presidency; (iii) *border to border*: distance between the closest borders of source country and EU country; (iv) *border to capital*: distance from source country border and EU country capital; (v) *centroid to centroid*: distance between the centroids of the source country and the EU country. In Online Appendix Figure B.4b, we report estimated coefficients for each of the five alternative IVs when logarithmic transformations of these distances are used as instruments. In constructing the alternative distances, the source countries for each route remain unchanged: Libya (Central Mediterranean); Ukraine (Eastern Borders); Turkey (Eastern Mediterranean Sea and Land); Mauritania (Western African); Morocco (Western Mediterranean Sea); Macedonia (Western Balkan). Regardless of distance calculation methods, both panels in Online Appendix Figure B.4 show strongly significant and negative coefficients, implying that routes farther away from the current EU presidency state experience a reduction in border enforcement.

Figure B.4: First Stage: Route Enforcement and Distance from EU Presidency - Alternative Distance Measures

(a) Distances



(b) Log Distances



*Note: The figure reports first stage estimates of our three enforcement measures on different versions of the instrument dist_EUpres (i.e. the linear distance between route r and the country holding the EU presidency in quarter t) and a full set of fixed effects. The alternative constructions of the instrument are: (i) capital to capital: our main IV (as reported in Table 3); (ii) capital to border; (iii) border to border; (iv) border to capital; (v) centroid to centroid. Panel B.4a utilises distances and Panel B.4b utilises log distances. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin–route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

Excluding periods and routes. During the peak of the refugee crisis (2014-2015), the quality of data collection on border crossings was negatively impacted due to the huge number of migrants

involved and to the high frequency of repeated attempts. Moreover, enforcement policies may have been exceptional in both their implementation and political salience. We drop these two emergency years, and focus on the period 2009-2013 to test whether the mechanisms we have uncovered – both with the first and the second stage – were in place also in "normal" times. A second check concerns the Western Balkan route and the particularly high risk of double counting the same individuals along this route. Indeed, undocumented immigrants may enter the EU through Greece (Eastern Mediterranean route), then leave the EU entering Albania or other Balkan countries and then re-enter the EU again through the Balkan route. To address this potential concern, we drop this route for the entire period 2009-2015. Online Appendix Table B.1 shows that our main 2SLS estimates are robust to both these sample restrictions.

Table B.1: **Migrant Crossings and Route Enforcement (2SLS estimates) - Robustness checks: Sample Restrictions**

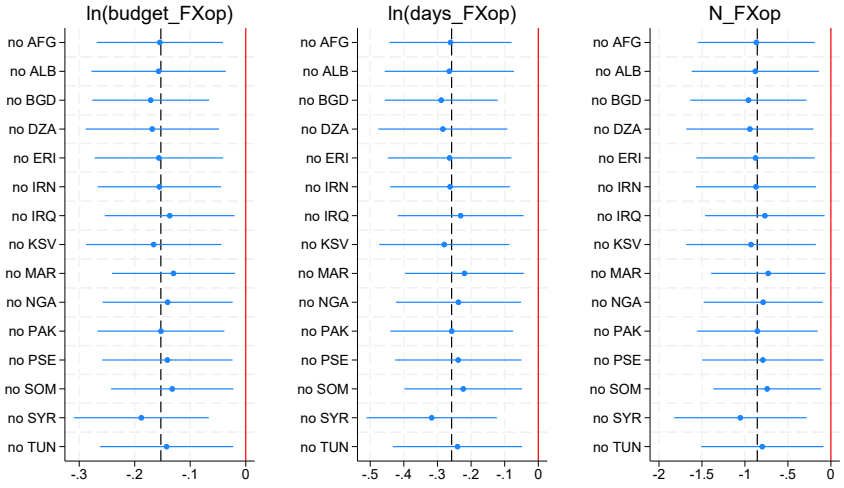
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	2SLS	2SLS	2SLS	RF	2SLS	2SLS	2SLS	RF
		Period: 2009-2013			No Western Balkan route (2009-2015)			
ln(budget_FXop)	-0.089*				-0.153*			
	[0.045]				[0.076]			
ln(days_FXop)		-0.152**				-0.242**		
		[0.075]				[0.116]		
N_FXop			-0.813*				-0.637*	
			[0.457]				[0.316]	
dist_EUpres				0.110*				0.091*
				[0.063]				[0.046]
IV: KP F-stat	19.50	15.49	21.25		88.56	73.74	27.67	
Observations	2,100	2,100	2,100	2,100	2,520	2,520	2,520	2,520
Route-Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: The table reports 2SLS estimates (col. 1-3 and col. 5-7) of log crossings on route r and quarter t on three alternative measures of enforcement (on the same route and quarter) – ln(budget_FXop) (col. 1 and 5), ln(days_FXop) (col. 2 and 6) and N_FXop (col. 3 and 7) – instrumenting enforcement with the distance to the EU presidency variable (dist_EUpres). Reduced Form (RF) estimates of log crossings on the instrument are reported in columns 4 and 8. In columns 1-4, we restrict the sample to the period 2009-2013. In columns 5-8, we exclude the Western Balkan route from the sample. All specifications include fixed effects for route-origin country, time-origin country and quarter-route dummies. Sample: top 15 nationalities. Standard errors are clustered at the area of origin-route level: *** p<0.01, ** p<0.05, * p<0.1.*

Countries of origin. The results presented so far refer to a sample of the top 15 source countries over the period 2009 and 2015. We now test whether our results are sensitive to the inclusion or exclusion of a specific source country by manipulating the set of countries in two ways. First, we test the robustness of our estimates to the exclusion of one source country at a time (Online Appendix Figure B.5): this test is particularly important because we have two countries (Syria and Afghanistan) which account for almost 60% of the total crossings (see Appendix Table A.1). Second, we vary the number of top sending countries in our sample from 10 to 20 (Online Appendix Figure B.6). In all

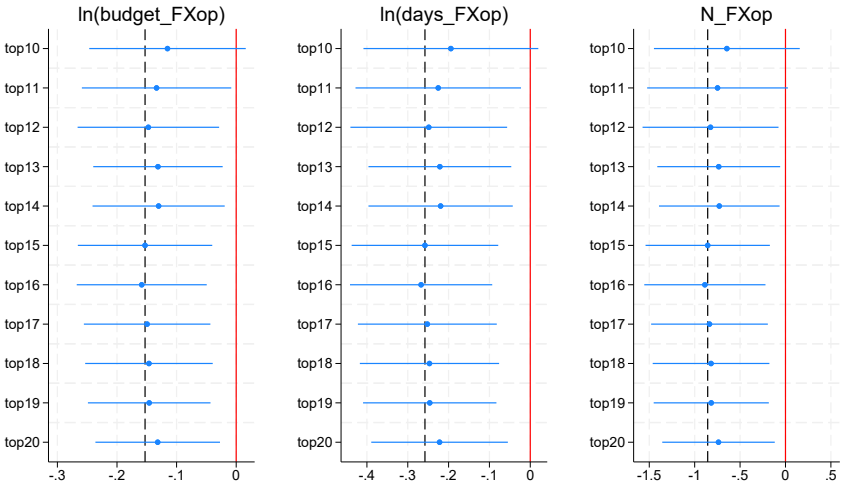
cases, our 2SLS estimates remain stable and strongly significant.

Figure B.5: **Migrant Crossings and Route Enforcement (2SLS estimates) - Robustness checks: Leave out One Source Country**



Note: The figure reports 2SLS estimates (and 95% confidence intervals) of log crossings on three alternative measures of enforcement ($ln(budget_FXop)$, $ln(days_FXop)$ and N_FXop). We instrument enforcement with the distance from the current EU presidency. In each regression we leave out one of the fifteen top sending countries that compose our main estimating sample. A full set of fixed effects is included in all regressions. The vertical black dashed line shows the estimated coefficient in the full sample (as reported in Table 5). Standard errors are clustered at the area of origin-route level.

Figure B.6: **Migrant Crossings and Route Enforcement (2SLS estimates) - Robustness Checks: Varying Set of Top Source Countries (Top10-Top20)**



Note: The figure reports 2SLS estimates (and 95% confidence intervals) of log crossings on three alternative measures of enforcement ($lnbudget_FX$, $lndays_FX$ and num_FX). We instrument enforcement with the distance from the current EU presidency. In each regression, we vary the number of top sending countries included in our sample from 10 to 20 (our main estimating sample comprises 15 source countries). The vertical black dashed line shows the estimated coefficient in the main sample including the top 15 nationalities (as reported in Table 5). A full set of fixed effects is included in all regressions. Standard errors are clustered at the area of origin-route level.

Clustering and aggregate regressions. The estimates presented so far have standard errors clustered at the route and macro area of origin level, leading to 49 clusters. The underlying variation in enforcement, however, is at the route level, which would be the most conservative level of clustering we could adopt in this setting. Nevertheless, this would leave us with just seven clusters, creating serious concerns about the consistency of our standard errors (Cameron et al., 2008). We deal with this issue by re–running aggregate OLS, 2SLS and RF regressions in which we sum crossings across origin countries, so that each observation now reports the total number of crossings on each route and quarter (this aggregated sample includes 196 observations). We cluster standard errors at the route level, use wildbootstrap and report bootstrapped p-values with alternative number of repetitions (9,999 and 99,999). Our results – reported in Online Appendix Table B.2 – are robust to these checks.

Table B.2: **Migrant Crossings and Route Enforcement (OLS, 2SLS and RF estimates) - Robustness Checks: Aggregate Regressions**

	(1) OLS	(2) OLS	(3) OLS	(4) 2SLS	(5) 2SLS	(6) 2SLS	(7) RF
ln(budget_FXop)	-0.005			-0.325**			
	[0.033]			[0.131]			
ln(days_FXop)		-0.017			-0.549**		
		[0.053]			[0.217]		
N_FXop			0.106			-1.821	
			[0.216]			[1.190]	
dist_EUpres							0.225*
							[0.114]
Bootstrapped p-values:							
9,999 reps	0.890	0.811	0.634	0.00310	0.00310	0.0105	0.0423
99,999 reps	0.893	0.810	0.634	0.00306	0.00302	0.0107	0.0427
				FS	FS	FS	
dist_EUpres				-0.692*	-0.410*	-0.123	
				[0.290]	[0.202]	[0.084]	
Bootstrapped p-values:							
9,999 reps				0.0352	0.0621	0.118	
99,999 reps				0.0310	0.0576	0.115	
Observations	196	196	196	196	196	196	196
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Route-Season	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: The table reports OLS (col. 1–3) and 2SLS (col. 4–6) estimates of log total crossings (summing over all origin countries) on route r and quarter t on three alternative measures of enforcement (on the same route and quarter) – ln(budget_FXop) (col. 1), ln(days_FXop) (col. 2) and N_FXop (col. 3) – instrumenting enforcement with the distance to EU presidency variable (dist_EUpres). Reduced Form (RF) estimates of log crossings on the instrument are reported in column 7. All specifications include fixed effects for route-origin country, time-origin country, and quarter-route dummies. Standard errors are clustered at the route level (7 clusters): *** p<0.01, ** p<0.05, * p<0.1; wild-bootstrapped p-values obtained with the STATA package boottest (Roodman et al., 2019) and different numbers of replications are reported below each estimate. In columns 4-6, we report the estimated coefficient on the instrumental variable in the first stage.*

Inverse Hyperbolic Sine Transformation. In our empirical analysis, we take log of migrants crossings and use the transformation $\ln(mig + 1)$ to deal with zeros. Online Appendix Table B.3 reports 2SLS and RF estimates of our main estimating equation (7) using the inverse hyperbolic sine

transformation for crossings ($\ln(mig + (\sqrt{x^2+1}))$) rather than the log transformation. All estimates are extremely similar to those reported in Table 5.

Table B.3: **Migrant Crossings and Route Enforcement (2SLS and RF estimates) - Robustness Checks: Inverse Hyperbolic Sine Transformation**

	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) RF
Panel A - All Routes				
ln(budget_FXop)	-0.162**			
	[0.061]			
ln(days_FXop)		-0.274***		
		[0.098]		
N_FXop			-0.910**	
			[0.374]	
dist_EUpres				0.112**
				[0.046]
IV: KP F-stat	41.30	30.05	15.64	
Panel B - Sea and Land Routes				
ln(budget_FXop)-Sea Route	-0.180			
	[0.164]			
ln(budget_FXop)-Land Route	-0.155**			
	[0.067]			
ln(days_FXop)-Sea Route		-0.238		
		[0.205]		
ln(days_FXop)-Land Route		-0.295**		
		[0.127]		
N_FXop-Sea Route			-0.289	
			[0.386]	
N_FXop-Land Route			-1.646*	
			[0.936]	
stddist_EUpres_Sea				0.058
				[0.099]
stddist_EUpres_Land				0.184*
				[0.109]
IV-sea: KP F-stat	9.737	13.27	44.84	
IV-land: KP F-stat	52.73	31.58	5.659	
Observations	2,940	2,940	2,940	2,940
Route-Country FE	Yes	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes	Yes

*Note: The table reports 2SLS (col. 1-3) estimates of arcsinh crossings on route r and quarter t on three alternative measures of enforcement (on the same route and quarter) - ln(budget_FXop) (col. 1), ln(days_FXop) (col. 2) and N_FXop (col. 3) - instrumenting enforcement with the distance to EU presidency variable (dist_EUpres). Reduced Form (RF) estimates of log crossings on the instrument are reported in column 4. All specifications include fixed effects for route-origin country, time-origin country and quarter-route dummies. In Panel A we consider all routes together while in Panel B we separately consider land and sea routes. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin-route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

National enforcement. Our measures of enforcement exclusively capture the interventions coordinated by Frontex (see Section 4.2.2). While EU-level operations are in place, national governments still carry out their own border checks and enforcement policies. Unfortunately, systematic and comparable data on these national interventions do not exist. Being unable to observe national policies – which generate variation in enforcement at the route and time level – may potentially bias our results.

Table B.4: **Migrant Crossings and Route Enforcement (2SLS estimates) - Robustness Checks: Controlling for National Enforcement**

	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS	(6) 2SLS	(7) 2SLS	(8) 2SLS	(9) 2SLS
ln(budget_FXop)	-0.164***			-0.152**			-0.151**		
	[0.061]			[0.058]			[0.057]		
ln(days_FXop)		-0.275***			-0.256***			-0.253***	
		[0.096]			[0.092]			[0.091]	
N_FXop			-0.947**			-0.875**			-0.870**
			[0.411]			[0.367]			[0.364]
enforc_index_1 (C=3)	-0.244	-0.262	-0.543						
	[0.374]	[0.396]	[0.391]						
enforc_index_2 (C=3)				0.279	0.335	0.190			
				[0.767]	[0.793]	[0.767]			
enforc_index_3 (C=3)							-0.585	-0.476	-0.518
							[1.115]	[1.141]	[1.134]
IV: KP F-stat	36.19	26.70	11.96	39.74	29.13	13.88	40.12	29.66	14.31
Observations	2,824	2,824	2,824	2,876	2,876	2,876	2,876	2,876	2,876
Route-Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: The table reports 2SLS estimates of log crossings on route r and quarter t on three alternative measures of enforcement (on the same route and quarter) - ln(budget_FXop) (col. 1 , 4 and 7), ln(days_FXop) (col. 2, 5 and 8) and N_FXop (col. 3, 6 and 9) - instrumenting enforcement with the distance to the EU presidency variable (dist_EUpres). Alternative measures of national enforcement are included in the regressions (see Appendix Section B.1.2): enforc_index_1 (= returned/ordered to leave; col. 1-3); enforc_index_2 (=(returned + refused entry at the border) / (ordered to leave + refused entry at the border + illegally present); col. 4-6); enforc_index_3 (ordered to leave + refused entry at the border) / (ordered to leave + refused entry at the border + illegally present); col. 7-9). The enforcement measures are calculated as average of enforcement in the three closest countries of arrival of each route. All specifications include fixed effects for route-origin country, time-origin country and quarter-route dummies. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin-route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

Table B.5: **Migrant Crossings and Route Enforcement (2SLS estimates) - Robustness Checks: Including Mare Nostrum Operation**

	(1) 2SLS	(2) 2SLS	(3) 2SLS
ln(budget_FXop_MN)	-0.148***		
	[0.055]		
ln(days_FXop_MN)		-0.255***	
		[0.088]	
N_FXop_MN			-0.769**
			[0.298]
IV: KP F-stat	50.98	32.30	23.23
Observations	2,940	2,940	2,940
Route-Country FE	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes

*Note: The table reports 2SLS estimates of log crossings on route r and quarter t on three alternative measures of enforcement (on the same route and quarter) which include the Mare Nostrum operation - ln(budget_FXop_MN) (col. 1), ln(days_FXop_MN) (col. 2) and N_FXop_MN (col. 3) - instrumenting enforcement with the distance to the EU presidency variable (dist_EUpres). All specifications include fixed effects for route-origin country, time-origin country and quarter-route dummies. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin-route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

Whether omitting national enforcement will upward or downward bias our results will ultimately depend on whether EU-policies crowd in or crowd out national policies. If national policies are crowded in by EU policies, our estimates would be downward biased: they would exaggerate the impact of EU enforcement because the effect is amplified by changes in the same direction in national enforcement. Vice versa, if national enforcement is crowded out by EU enforcement – as one would expect if national governments reduce their effort in response to a stronger presence of EU border patrolling forces – then the effect would be upward biased. We would thus underestimate the actual effect of EU enforcement because it is partially undermined by changes of opposite direction in national enforcement. While we consider the latter hypothesis (i.e., crowding out) more likely to occur in practice, we nevertheless address this issue by performing two empirical tests. First, in Online Appendix Table B.4 we include measures of national enforcement in our specification to test the robustness of our findings. We use yearly data on national enforcement from Eurostat to construct three alternative bilateral (source-host country) indexes of immigration enforcement in EU countries (see Appendix Section B.1.2). For each index, we then compute the average of national enforcement in the three closest arrival countries for each route and include it in our main IV regressions.[2] Estimation results are reported in Online Appendix Table B.4: the inclusion of these additional controls does not affect our findings on EU

[2] All results are robust to alternative ways of constructing these national enforcement indexes. In particular, results are robust to consideration of different set of arrival countries, or even to the inclusion of the weighted average of national enforcement across all EU countries, weighted by inverse distance from each route.

enforcement policies, implying little scope for crowding-out or crowding-in of national enforcement policies.

As a further check, we can include in our standard three measures of enforcement information on one of the largest national operations implemented in the period we study: Mare Nostrum, a large-scale naval operation primarily meant to provide support to search and rescue operations in the Central Mediterranean (Deiana et al., 2024). This operation was launched and entirely funded by the Italian government in October 2013 and then replaced approximately a year later by the EU-Frontex operation Triton. We could gather precise information on the budget and duration of this operation. As Online Appendix Table B.5 shows, taking into account the Mare nostrum operation does not alter our findings in any relevant way.

Table B.6: **Migrant Crossings and Route Enforcement (2SLS and RF estimates): Alternative IV Strategy (Incoming Elections in 2 and 4 Closest Countries)**

	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS	(6) 2SLS	(7) RF	(8) RF
Panel A - Elections in 2 Closest Countries								
ln(budget_FXop)	-0.117**	-0.134***						
	[0.055]	[0.040]						
ln(days_FXop)			-0.158**	-0.195***				
			[0.072]	[0.057]				
N_FXop					-1.804	-0.999***		
					[1.131]	[0.357]		
d_el_lowtrustEU (C=2)							-0.232**	-0.260**
							[0.105]	[0.109]
dist_EUpres								0.114**
								[0.044]
IV: KP F-stat	18.26	20.89	26.58	19.67	4.577	9.177		
Panel B - Elections in 4 Closest Countries								
ln(budget_FXop)	-0.118**	-0.132***						
	[0.058]	[0.042]						
ln(days_FXop)			-0.158**	-0.187***				
			[0.075]	[0.062]				
N_FXop					-0.882**	-0.868***		
					[0.411]	[0.296]		
d_el_lowtrustEU (C=4)							-0.221**	-0.233**
							[0.102]	[0.103]
dist_EUpres								0.111**
								[0.042]
IV: KP F-stat	30.49	28.06	37.44	23.86	43.95	29.80		
IV: d_el_lowtrustEU	Yes	Yes	Yes	Yes	Yes	Yes		
IV: dist_EU_pres	No	Yes	No	Yes	No	Yes		
Observations	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940
Route-Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Route FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: The table reports 2SLS estimates (columns 1-6) of log crossings on route r and quarter t on three alternative measures of enforcement (on the same route and quarter) - ln(budget_FXop) (col. 1-2), ln(days_FXop) (col. 3-4) and N_FXop (col. 5-6). In odd columns, we instrument enforcement with a binary variable for incoming elections in countries with a high (lagged) share of eurosceptics. In even columns, we jointly use the election instrument with the distance to the EU presidency instrument (dist_EUpres). In Panel A, the election instrument is built using the two closest countries of arrival for each route (d_el_lowtrustEU(C = 2)); in panel B, the four closest countries are used (d_el_lowtrustEU(C = 4)). Reduced Form (RF) estimates of log crossings on the instruments are reported in columns 7-8. All specifications include fixed effects for route-origin country, time-origin country, and quarter-route dummies. Sample: top 15 nationalities (2009-2015). Standard errors are clustered at the area of origin-route level (49 clusters): *** p<0.01, ** p<0.05, * p<0.1.*

Alternative constructions of the incoming elections instrument. In Table 6, we have used as alternative instruments for our 2SLS estimates a dummy identifying the presence of incoming elections in one of the three closest countries of arrival for each route if they have a high (lagged) share of Eurosceptics. In Online Appendix Table B.6, we show that results are not affected when we consider, respectively, the two or four closest countries to each route instead.

B.3.2 Migrant Crossings and Enforcement: Source Country-Level Analysis

In this Section, we perform several robustness checks on our results of the source country-level analysis (discussed in Section 6.1) and explore heterogeneous effects for refugee– and non-refugee–sending countries. All these additional estimates confirm the lack of any statistically significant effect of border enforcement on total crossings.

Alternative definitions of enforcement by country of origin. In our baseline analysis, we defined our variable of interest $enf_{s,t}$ as the amount of enforcement on the migratory route closest to source country s. Here, we check the robustness of our null results to the following alternative definitions of $enf_{s,t}$: (i) enforcement on the route most used by immigrants from country s in the base year 2009; (ii) a weighted average of enforcement on the routes that in the base year 2009 accounted for 75% of all crossings from country s; (iii) a weighted average of enforcement on the three closest routes for country of origin s. In the latter two cases, the weights are proportional to the share of all crossings from the country on each route considered and are normalised to sum to one. Online Appendix Table B.7 shows that the use of alternative aggregation schemes leaves our main results unaffected.

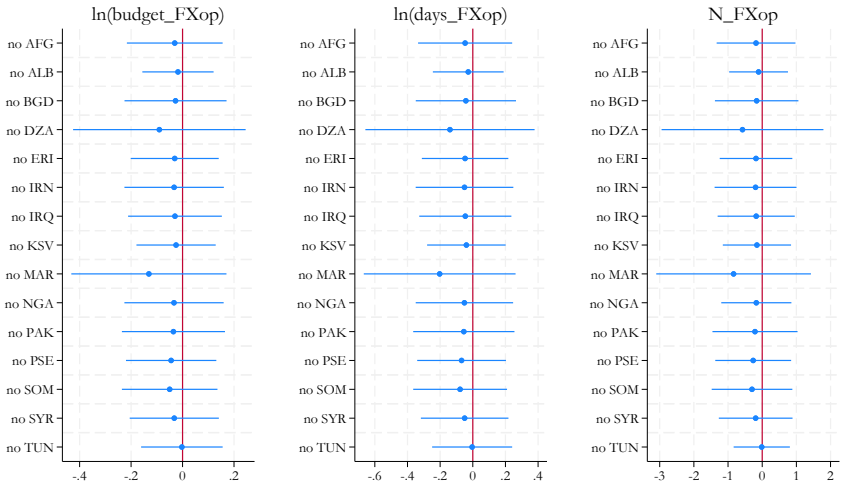
Table B.7: **Alternative aggregations of enforcement by origin**

	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS	(6) 2SLS
Panel A: Enforcement variable: ln(budget_FXop)						
Most used route in 2009	-0.065	-0.040				
	[0.152]	[0.131]				
Routes accounting for 75 percent of 2009 cross			-0.091	-0.055		
			[0.201]	[0.173]		
Three closest routes					-0.199	-0.107
					[0.400]	[0.313]
IV: KP F-stat	4.875	6.570	13.42	10.82	19.66	18.01
Panel B: Enforcement variable: ln(days_FXop)						
Most used route in 2009	-0.095	-0.058				
	[0.224]	[0.190]				
Routes accounting for 75 percent of 2009 cross			-0.136	-0.082		
			[0.299]	[0.255]		
Three closest routes					-0.196	-0.115
					[0.409]	[0.347]
IV: KP F-stat	5.892	8.640	17.88	14.52	28.77	22.96
Panel C: Enforcement variable: N_FXop						
Most used route in 2009	-0.478	-0.281				
	[1.162]	[0.928]				
Routes accounting for 75 percent of 2009 cross			-0.563	-0.334		
			[1.358]	[1.090]		
Three closest routes					-0.563	-0.341
					[1.359]	[1.113]
IV: KP F-stat	4.613	8.291	4.619	8.582	4.902	9.342
Observations	420	420	420	420	420	420
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country controls	No	Yes	No	Yes	No	Yes

*Note: The table reports 2SLS of the effect of different measures of border enforcement on the number of attempted illegal border crossings by origin country, where enforcement by country is alternatively constructed as the enforcement on the route most used by that origin country in 2009, as the weighted average of the enforcement on the route(s) accounting for 75% of all crossings from that origin country in 2009, or as a weighted average of enforcement in the three closest routes for each origin country. The instrument is a dummy for the presence of an election in any of the closest 3 countries to the arrival point of the preferred route for each origin country, if the country holding the election is Eurosceptic. Country and year fixed effects are included in all regressions. Standard errors are clustered at the country of origin level: *** p<0.01, ** p<0.05, * p<0.1.*

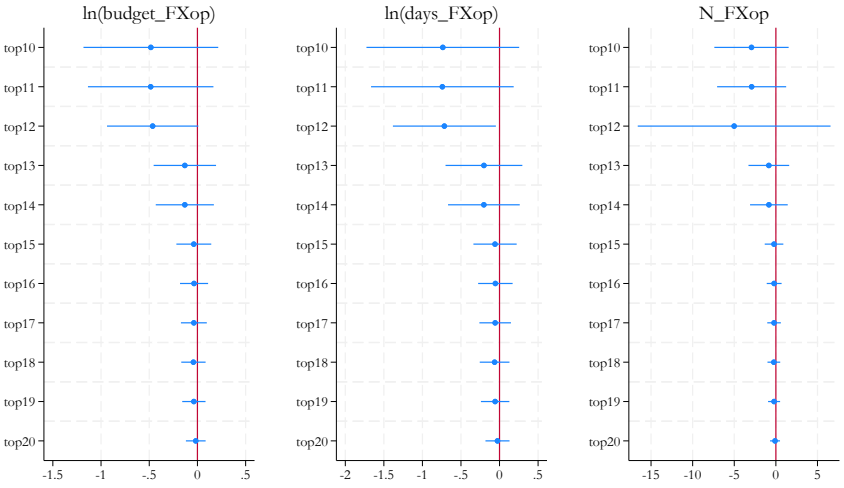
Countries of Origin. Our null results are unaffected by changes in the number of countries included in our sample and to the exclusion of any specific country of origin. Online Appendix Figure B.7 shows that our estimates do not change when each source country is, in turn, excluded from the sample: all the 2SLS estimates are negative but not significantly different from zero at conventional levels. Further, in Online Appendix Figure B.8, we display 2SLS estimates of the main effect when we vary the sample from the top 10 to the top 20 countries of origin for each of our three measures of enforcement. In no case is any estimate statistically significant at conventional levels. When restricting the sample to top10–top12 countries, the estimated coefficients become consistently negative but also highly imprecise due to critically low F-statistics in the first stage regressions.

Figure B.7: **Regressions by Country - Leave out One Country**



Note: The figure reports 2SLS estimates (and 95% confidence intervals) of log crossings on three alternative measures of enforcement ($ln(budget_FXop)$, $ln(days_FXop)$ and N_FXop). We instrument enforcement with a dummy for elections happening in quarter t in the three countries nearest to the closest route to country c, if the country holding the election is Eurosceptic. In each regression we leave out one of the fifteen top sending countries that compose our main estimating sample. A full set of fixed effects is included in all regressions. Standard errors are clustered at the country of origin level.

Figure B.8: **Regressions by Country - Source Country: top10-top20**



Note: The figure reports 2SLS estimates (and 95% confidence intervals) of log crossings on three alternative measures of enforcement ($ln(budget_FXop)$, $ln(days_FXop)$ and N_FXop). We instrument enforcement with a dummy for elections happening in quarter t in the three countries nearest to the closest route to country c, if the country holding the election is Eurosceptic. We report estimates for a number of source countries varying from 10 to 20 (our main estimating sample comprises 15 source countries). A full set of fixed effects is included in all regressions. Standard errors are clustered at the country of origin level.

Alternative instruments. Further, we vary the definitions of our instrumental variable by using the two or the four countries nearest to the arrival point of the route closest to each origin country

(rather than three, as in our baseline results reported in Table 8). These alternative instruments are fairly relevant – as shown by the F-statistics reported in the Table B.8 – especially when four countries are used. Yet the estimated effects of enforcement on total crossings remain non-statistically different from zero.

Table B.8: **Alternative Instruments**

	(1)	(2)	(3)	(4)
	2SLS	2SLS	2SLS	2SLS
ln(budget_FXop)	-0.010	0.001	-0.101	-0.098
	[0.104]	[0.086]	[0.079]	[0.075]
IV: KP F-stat	12.87	16.64	36	39.54
ln(days_FXop)	-0.017	0.002	-0.157	-0.152
	[0.167]	[0.138]	[0.124]	[0.118]
IV: KP F-stat	10.65	14.18	38.68	42.52
N_FXop	-0.112	0.015	-0.503	-0.487
	[1.165]	[0.906]	[0.444]	[0.422]
IV: KP F-stat	1.272	1.705	17.59	19.12
IV: d_el_lowtrustEU (C=2)	Yes	Yes	No	No
IV: d_el_lowtrustEU (C=4)	No	No	Yes	Yes
Observations	420	420	420	420
Country FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Country controls	No	Yes	No	Yes

*Note: The table reports 2SLS of the effect of alternative enforcement measures on total attempted crossings by country. The instrument are a dummy for the presence of an election in any of the closest 2 (columns 1-2) or closest 4 (columns 3-4) countries to the arrival point of the preferred route for each origin country, if the country holding the election is Eurosceptic. Country-level controls are the logarithm of per capita GDP and a set of dummies for the five levels of the Political Terror Scale index. Country and year fixed effects are included in all regressions. Standard errors are clustered at the country of origin level: *** p<0.01, ** p<0.05, * p<0.1.*

Refugees and Non-refugees. Finally, we explore heterogeneity in overall border enforcement effects for refugees and economic migrants (as we do for the route-level analysis in Table B.9). As in Section 5.5, we interact our measure of border enforcement with a dummy identifying countries with the presence of Internally Displaced People (IDPs) or alternatively that have a high score (five out of five, but results are robust to alternative thresholds) of the Political Terror Scale, and thus are likely to be source countries of asylum seekers. As Online Appendix Table B.9 shows, none of the results reported in suggest a differential deterrent effect of border enforcement for refugees versus other migrants. The interactions of both our proxies with any of the three measures of enforcement are mostly negative but not statistically significant at conventional levels.

Table B.9: **Regressions by Country - Heterogeneity: Refugees and Economic Migrants**

	(1) 2SLS	(2) 2SLS	(3) 2SLS
Panel A - Terror States			
ln(budget_FXop) * State Terror	0.097		
	[0.159]		
ln(budget_FXop) * non-State Terror	-0.068		
	[0.106]		
ln(days_FXop) * State Terror		-0.016	
		[0.121]	
ln(days_FXop) * non-State Terror		-0.070	
		[0.140]	
N_FXop * State Terror			-0.135
			[0.484]
N_FXop * non-State Terror			-0.267
			[0.567]
Panel B - Internally Displaced People (IDPs)			
ln(budget_FXop) * IDPs>0	0.279		
	[0.210]		
ln(budget_FXop) * IDPs=0	-0.144		
	[0.155]		
ln(days_FXop) * IDPs>0		0.218*	
		[0.104]	
ln(days_FXop) * IDPs=0		-0.187	
		[0.198]	
N_FXop * IDPs>0			0.237
			[0.424]
N_FXop * IDPs=0			-0.846
			[0.948]
Observations	420	420	420
Country FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes

*Note: The table reports 2SLS estimates of the effect of different measures of border enforcement, and its interaction with a dummy denoting countries subject to "State terror" (i.e. scoring five out of five according to the Political Terror Scale of the US State Department (Panel A) or with a dummy denoting countries hosting Internally Displaced People (Panel B) on the number of attempted illegal border crossings by origin country. The instrument is a dummy for the presence of an election in any of the closest 3 countries to the arrival point of the preferred route for each origin country, if the country holding the election is Eurosceptic. Country and year fixed effects are included in all regressions. Standard errors are clustered at the country of origin level: *** p<0.01, ** p<0.05, * p<0.1.*

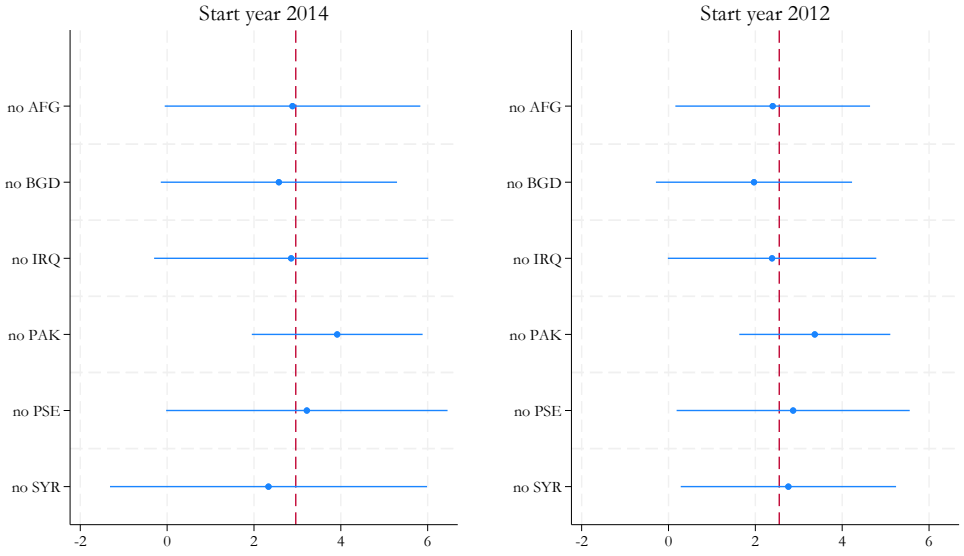
B.3.3 Externalizing Border Enforcement: the EU-Turkey deal

The results discussed in Section 6.2 strongly suggest that the shutdown of the East Mediterranean route brought about by the EU-Turkey deal led to a sizable diversion of flows toward the Central Mediterranean route. In this Section, we perform two further robustness checks.

First, we want to make sure that our results do not depend critically on migration from one specific origin country. As we discussed above, a handful of origin countries account for most of the total crossings on the East Mediterranean route. In particular, between 2012 and 2014, Syrian migrants made up 46% of all crossings on the East Mediterranean route, and 54% of all Asians using that route. Additionally, Afghan migrants accounted for 25% of all East Mediterranean crossings and for almost 30% of those from Asia. Together with Bangladesh, Iraq, Pakistan, and Palestine, these

six countries represent 95% of all crossings from Asian countries. In Online Figure B.9, we show how the estimate of the parameter b_3 in equation (9) for crossings from Asian countries on the Central Mediterranean route changes when each of the six main Asian origin countries is in turn excluded from the sample. Regardless of the time period considered (2014–2016 in the left figure and 2012–2016 in the right figure), the graph shows that the size and the precision of the estimated effect are very similar to the baseline (displayed by the vertical dashed red line), regardless of the country that is excluded.

Figure B.9: Diversion of Asian migrants toward the Central Mediterranean route: leave out one country



Note: The figure reports the estimated effect of the EU-Turkey deal on log crossings from Asian countries on the Central Mediterranean route when each of the countries Afghanistan, Bangladesh, Iraq, Pakistan, Palestine and Syria are in turn excluded from the sample, and when the start year is alternatively 2012 or 2014. The vertical red dashed line denotes our baseline estimates when all Asian countries are considered.

Second, we change the sample used in the analysis, substantially expanding the number of observations. While in Section 6.2 we estimate equation ((9)) using aggregated data for all Asian migrants, here we use country-of-origin level data and estimate a slightly modified version of the same equation which includes country × year interaction dummies. We focus on the six most important Asian countries of origin for the East Mediterranean route which we listed in the previous paragraph. Estimates from these country-level regressions in Online Appendix Table B.10 and fully confirm our findings from aggregated data (reported in Table 9).

Table B.10: **The Effects of the EU-Turkey Deal - Top 6 Asian Countries**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	East Mediterranean Route					Central Mediterranean Route				
(Apr-Sep)	0.713**					2.318**				
	[0.195]					[0.596]				
(Apr-Sep)*y2016	-3.281***	-5.832***		-4.163***		1.203***	1.690***		1.642***	
	[0.333]	[0.286]		[0.538]		[0.252]	[0.341]		[0.337]	
(Apr-Jun)*y2016			-5.253***		-3.835***			0.577		1.210**
			[0.211]		[0.423]			[0.522]		[0.360]
(Jul-Sep)*y2016			-6.411***		-4.490***			2.802***		2.074**
			[0.381]		[0.671]			[0.441]		[0.517]
Observations	138	138	138	282	282	138	138	138	282	282
Start year	2014	2014	2014	2012	2012	2014	2014	2014	2012	2012
Coutry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

*Note: The table reports results from regressions of log monthly crossings of Asian migrants on the East (col. 1-5) or Central (col. 6-10) Mediterranean routes on a dummy for months April to September ("post", col. 1 and 6) or month dummies (other columns), year dummies and the interaction of the "post" dummy with a dummy for year 2016. In columns 3, 5, 8 and 10 the "post" dummy is split into a dummy for April-June and a dummy for July-September. Observations cover the period Oct. 2014-Sept. 2016 (col. 1-3 and 6-8) or Oct. 2012 - Sept. 2016 (col. 4-5 and 9-10). The observations for March 2016 - the month in which the EU-Turkey deal was signed - are dropped in all regressions. Standard errors are clustered at the source country level: *** p<0.01, ** p<0.05, * p<0.1.*