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ERF 32nd Annual Conference
June 14-16 | Cairo, Egypt

2026

# Industrial Policy in MENA: Objectives, Drivers and Scope for Plurilateral Cooperation

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ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية

**Industrial Policy in MENA: Objectives, Drivers and Scope for Plurilateral Cooperation***

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March 2026

**Abstract**: Unilateral trade and industrial policies adopted by large economies are adversely impacting partner countries and the rules-based international order. One potential response by affected states is to emulate such policies; another is to cooperate with each other to internalize policy spillovers or more efficiently achieve shared objectives. Middle East and North African (MENA) countries, states that have participated to only a limited extent in global manufacturing value chain production, provide a useful focal point for analyzing the prospects of such plurilateral cooperation. We investigate the relationship between trade-related industrial policy interventions by MENA countries and those adopted by major G20 economies, considering the role of bilateral trade linkages and political alignment in the sequential implementation of similar policies. Our findings reveal significant heterogeneity in motivations for policy interventions, sectoral priorities and the extent of policy emulation across countries, with implications for the likelihood of participation in plurilateral agreements.

**Keywords**: industrial policy, policy spillovers, regional integration, open plurilateral agreements, Middle East and North Africa

**JEL codes**: F13, F15, F52, F53, H23, L52.

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* Prepared for the 2026 annual conference of the Economic Research Forum. Support from the European Research Council, grant no. 101142666-PIANO-ERC-2023-ADG is gratefully acknowledged (Hoekman).

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## Introduction

The use of trade and industrial policies by G20 countries has increased substantially in the past decade. This reflects different objectives, including greening the economy, enhancing sectoral competitiveness, bolstering supply chain resilience, safeguarding access to critical supplies and national security. The associated policies have direct or indirect effects on firms operating in foreign countries,[1] and induce responses. Foreign governments may seek to assist domestic firms to address competitive impacts, or decide to emulate foreign interventions, reflecting demonstration or policy learning effects. Both types of responses may influence incentives for states to cooperate to reduce negative spillovers from national policies or to benefit from concerted action. Determining the scope for, and design of, such cooperation is a central policy question confronting "middle power" governments and stakeholders in responding to the withdrawal of the United States from its historical leadership of the rules-based international order (e.g., Carney, 2026), competitive pressure by China, and risks that the two superpowers weaponize trade, investment and security dependencies.

In this paper we analyze the relationship between the adoption of trade and industrial policies in a sample of countries in the Middle East and North Africa (MENA) – Algeria, Egypt, Israel, the six Gulf Cooperation Council member states, Morocco, Tunisia and Türkiye – and those implemented by major G20 economies. We do so with a view to contributing to research analyzing the potential scope for middle powers to pursue open plurilateral agreements (OPAs) to address policy spillover effects or to attain shared policy objectives. Our premise is that observed patterns of trade and industrial policies provide information on the prospects for participation in OPAs, with choice of partners endogenously determined by the extent to which national policy objectives are similar to those of major global players in the global North and global South, the intensity of bilateral trade relations (as a proxy measure for commercial spillovers) and the political alignment of states (as a proxy for similarity in values).

MENA countries are mostly middle power states. The Arab countries in the region are distinctive in several respects. Arab states have long played a central role in the global energy market (oil and gas) and central to international seaborne transport.[2] Arab countries only participate to a limited extent in the international production networks for manufactured goods that have led to massive growth in international trade within and between East Asia, North America and Europe. Production and trade in energy (oil and gas) and labor movements, with accompanying intra-regional financial transfers, have played a more important role (Diwan and Mouhoud, 2016; Young, 2023).[3]

Countries in other regions, notably the EU and many Asia-Pacific economies, are responding to US withdrawal from multilateral institutions by increasing efforts to negotiate and/or deepen preferential trade agreements (PTAs). This is a path that is likely to be less attractive to MENA governments given a history of limited engagement in international economic organizations and implementation of deep

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[1] See e.g., Rotunno and Ruta (2024) and Ruta and Sztajerowska (2025).

[2] The region plays an important role in international maritime transport because of its geography and infrastructure-specific chokepoints (notably the Suez Canal), and investments by Gulf states in seaports, airports, airlines and logistics services. See, e.g., Ziadah (2018) and Khalili (2020) on maritime transport networks and regional logistics connecting Arab countries to the global economy.

[3] See, e.g., Freund & Portugal-Perez (2012); Karam & Zaki (2015), Hoekman (2016) and Rutledge and Polyzos (2023). Malik and Galien (2020) highlight the importance of informal trade in the political economy of Arab integration. Hanieh (2018) discusses the increasing role of Gulf Cooperation Council (GCC) counties in international investment and capital flows, including through sovereign wealth funds.

PTAs that extend beyond reductions in tariffs. This reflects a mix of similarity in factor endowments and unwillingness of political leaders to commit to opening markets through participation in binding international institutional arrangements, in turn reflecting concerns regarding potential implications for regional economic and political leadership (Fawzy, 2003). A corollary has been a preference for less institutionalized, less comprehensive and more flexible issue-specific international arrangements (Del Sarto and Soler i Lecha, 2024).

Domain- or issue-specific open plurilateral agreements (OPAs) may be more pertinent as instruments to support cooperation in a specific area of economic activity, as these avoid repercussions for policy autonomy more broadly. OPAs can be designed to be modular, enabling countries to participate on an à la carte basis. They offer a means for countries to target specific policies or actions to facilitate trade and investment among participating countries or to attain shared nontrade policy objectives. Countries in the region have shown interest in pursuing such arrangements in areas in which they have a comparative advantage or that are the focus of national economic diversification strategies. Examples include the Gas Exporting Country Forum based in Qatar to support coordination and collaboration among gas producing countries (regional members: Algeria, Egypt, Iran, Libya, Qatar, UAE) and the Cairo-based East Mediterranean Gas Forum (Cyprus, Egypt, France, Greece, Israel, Italy, Jordan, and Palestine).[4] The planned India–Middle East–Europe Economic Corridor, a trade/transport/logistics partnership between India, Saudi Arabia, the UAE, the EU and the US provides an example outside the energy sector (Monroe 2023). Several MENA countries have joined plurilateral negotiations held under auspices of the WTO to define good regulatory practices in domestic regulation of services, investment facilitation, and e-commerce.[5]

Numerous suggestions have been made to pursue OPAs to govern the use of trade as an instrument to address climate change (e.g., Nordhaus, 2015; Tarr et al., 2023) or to bolster economic security through partnerships on critical minerals and supplies (e.g., Ufimtseva, Li and Shapiro, 2024; Hool, Helbig and Wierink, 2023). The prospects for club formation and participation in OPAs will depend on the extent to which states have similar objectives, use similar instruments, and the magnitude of negative international policy spillovers created by national policies. In this paper we focus on MENA countries because these countries may be more interested in OPAs than in joining or deepening extant PTAs, the main instrument used by states to internalize international commercial spillovers. The research question motivating our analysis is to assess the prospects for MENA participation in issue-specific OPAs to address policy spillovers. We do so by using the directed network structure of observed trade and industrial policies to evaluate patterns in the timing of implementation of policies in MENA countries that have similar objectives as those put in place by large G20 economies. Such "policy emulation" may be driven by trade effects and be reflected in the adoption of discriminatory policy instruments. Alternatively, emulation may reflect a commonality in policy objectives that is

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[4] The creation of the Organization of Petroleum Exporting Countries (OPEC) in 1960 is of course a major example.

[5] Bahrain, Saudi Arabia and the UAE participate in the initiatives on e-commerce, investment facilitation and services domestic regulation; Kuwait, Oman and Qatar are parties to the ecommerce and investment negotiations. Egypt, Morocco and Yemen are signatories of the investment facilitation agreement. The Domestic Services Regulation talks were concluded successfully and incorporated by signatories into their WTO services commitments. The other two negotiations led to draft agreements spanning a plurality of WTO members but have yet to be incorporated into the WTO because of opposition by several non-participating countries, led by India. See e.g., Hoekman and Sabel (2021) for further discussion.

reflected in the use of nondiscriminatory policy instruments.[6] We investigate two possible relationships: (i) a reactive one in which policies are driven by the economic (competitiveness) effects of policy measures in other countries, reflected in bilateral trade intensity, or, (ii) the time pattern of interventions is associated with political alignment between country pairs, as reflected in UN General Assembly voting.

Motivations for economic policies adopted in MENA countries during the 2009-2024 period differ from those observed in other countries. Focusing on the set of policies for which information is reported on the underlying objective (motivation), MENA economies implement significantly fewer policies motivated by climate change or by national security concerns. Most interventions are motivated by strategic sector considerations (50%) or economic resilience (40%). This contrasts with the industrial policy preferences observed outside the region, where climate change motivates 37.5% of industrial policy interventions, and national security 11.7%. If all policies are considered, including those for which no information is available on the underlying motivation or objective, most MENA policies comprise measures that reflect commercial considerations, i.e., serve to support domestic industries. MENA countries' industrial policy interventions are also distinct from those in other regions in their sectoral focus. A greater share of measures targets basic metals (iron and steel) and food production. The sectoral decomposition of policies also makes clear that most policy interventions motivated by economic resilience are in the food sector (agricultural production).

Different G20 members are central to the network of countries that sequentially pursue a given policy objective. The US is central for the national security-motivated policy network; the EU is central for climate-related policy interventions and India is central in the network of 'standard' commercial policy interventions. We find that aggregate bilateral trade relationships (trade intensity) do not drive policy emulation (sequential adoption) in MENA countries. Instead, political alignment between countries is a stronger driver. More disaggregated analysis that distinguishes between sectors reveal in key sectors such as basic iron and steel and food trade exposure has a negative and statistically significant effect on policy adoption. There is therefore sectoral heterogeneity in the drivers of policy adoption. Taken together, the results of the analysis suggest that participation by MENA countries in issue-specific OPAs will depend on the objectives motivating interventions and the participation of specific G20 economies. Plurilateral agreements to bolster economic resilience and diversification may offer the greatest prospects for participation by MENA countries.

The paper proceeds as follows. Section 1 briefly summarizes the data on the use of trade and industrial policies by MENA countries for which data are available. We then present a network-based analysis of patterns of policy adoption. Section 3 focuses on the relationship between the timing of policy adoption in G20 countries for a given motivation and subsequent implementation of policies motivated by the same objective in MENA countries. Section 4 investigates the role of trade intensity and political alignment between country pairs on the probability of observing policy emulation. Section 5 concludes with a discussion of possible implications of our findings on the prospects for MENA countries to engage in plurilateral cooperation efforts.

[6] We differentiate between discriminatory and nondiscriminatory policy measures because the former are more likely to be used in response to the commercial spillover effects of a foreign measure, which will depend on trade intensity, whereas the latter type of instruments is more likely to be associated with policy objectives that call for nondiscriminatory (regulatory) interventions that apply to both domestic and foreign firms.

## 1. Trade and investment policies: global patterns v. MENA, 2009-24

The Global Trade Alert (GTA) provides a regularly updated repository of information on trade and industrial policies adopted by states after the Global Financial Crisis. In our analysis we use data sourced from the GTA for the period 2009-2024.[7] The database includes over 13,000 new industrial policy interventions in 70+ countries for the 2009-2024 period. China, the EU and United States are the 'market leaders', jointly accounting for about half of all measures captured in the GTA.[8]

There is substantial heterogeneity in policy objectives and instrument use across countries. In the analysis that follows we distinguish between four types of "new industrial policy objectives"(NIPO) and commercial policy interventions where the objective is to protect/support domestic industries. "New " industrial policies are categorized depending on their primary purported objective: (i) *national security*; (ii) *economic resilience*; (iii) *strategic competitiveness*; and (iv) *climate change mitigation*. This categorization was developed by Evenett, Jakubik, Martin and Ruta (2024), who use natural language processing techniques to infer the main motivation for interventions based on text analysis of implementing laws or regulations. National security covers measures related to national defense; economic resilience interventions address matters such as supply chain chokepoints and access to critical supplies; strategic competitiveness covers policies aimed at developing or retaining technological leadership; and climate change spans measures to promote the energy transition and greening the economy.

These different types of industrial policies target different products and sectors. For climate change these include low carbon technologies (e.g., wind turbines, solar equipment; hydrogen), for national security they include dual-use products; for economic resilience products include critical materials and minerals, and strategic competitiveness includes advanced technology products (medical products, opto-electronics, IT and digital service sectors, electronics, robotics; optical fiber, aerospace, nuclear technology, semiconductors and related technologies).[9]

During the 2009-2024 period, considering all countries covered in the GTA, strategic competitiveness was the most frequently observed objective, accounting for 41% of NIPO-driven interventions, followed by climate-related measures (33%), economic resilience (16%) and national security and defense (10%). The last two motivations become more significant starting with the first Trump Administration (2016). All NIPO-related measures account for about one-third of the total number of interventions reported in the GTA database. The other two-thirds are commercial policy measures that generally aim to improve the ability of domestic firms to compete with foreign producers.

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[7] https://globaltradealert.org./ GTA data coverage starts in 2009. The database provides information on the policy instruments used (tariffs, nontariff measures, export measures, subsidies, etc.), the date of adoption, and the products affected at the 4 or 6-digit level of the Harmonized System classification. The methodology used to compile information on national policies and identifying those that are trade related is described in detail at https://globaltradealert.org/methodology.

[8] Our empirical analysis does not cover actions by the second Trump administration because of its reliance on tariffs increases and negotiation of reciprocal tariff reductions as opposed to industrial policies.

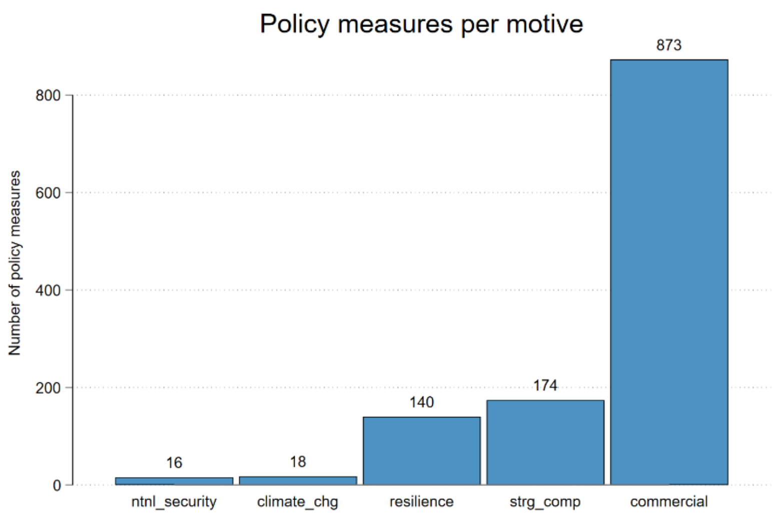
[9] The GTA database includes a law, decree, action etc. only once, but recognizes that a measure may encompass many specific instruments and target multiple sectors and/or countries. A given sector or product intervention may be associated with more than one industrial policy objective.

### 1.1. Policy interventions in the MENA region

Countries in the MENA region, as do countries elsewhere in the world, have a long history of industrial policy interventions, spanning both horizontal and vertical (sector-specific) measures. These interventions have included the pursuit of import substitution industrialization strategies characterized by high tariffs and other types of nontariff protection imposed at the border, state control of economic activity (nationalization; state-owned enterprises) and subsidy programs of various kinds. The prevalence of such intervention has waxed and waned over time reflecting changes in national development strategies and macro-economic performance. Our interest here is not to assess the specific features of trade and industrial policy strategies across the countries in our sample but to exploit the information provided in the GTA on trade and industrial policy interventions.[10]

The countries included in GTA database that we consider in the empirical analysis are Algeria, Egypt, Israel, Morocco, Tunisia, and Türkiye, Saudi Arabia, Qatar, and UAE. The GTA NIPO database lists 1,160 policies implemented by these countries between 2009 and 2024. Most interventions (873) comprise measures that are not motivated by one of the new industrial policy objectives. A total of 348 measures mention national security, climate change, economic resilience or strategic competition as motivation (Figure 1). Strategic competitiveness is the most important industrial policy objective, followed by economic resilience. MENA countries had a much smaller share of industrial policies with climate change mitigation objectives (5%) than all countries in the database (33%). Although commercial policy interventions dominate throughout the sample, a distinct change in the relative importance of new industrial policy motivations can be observed in the 2019-24 period.

**Figure 1. Number of measures by policy objective, MENA countries, 2009-2024**

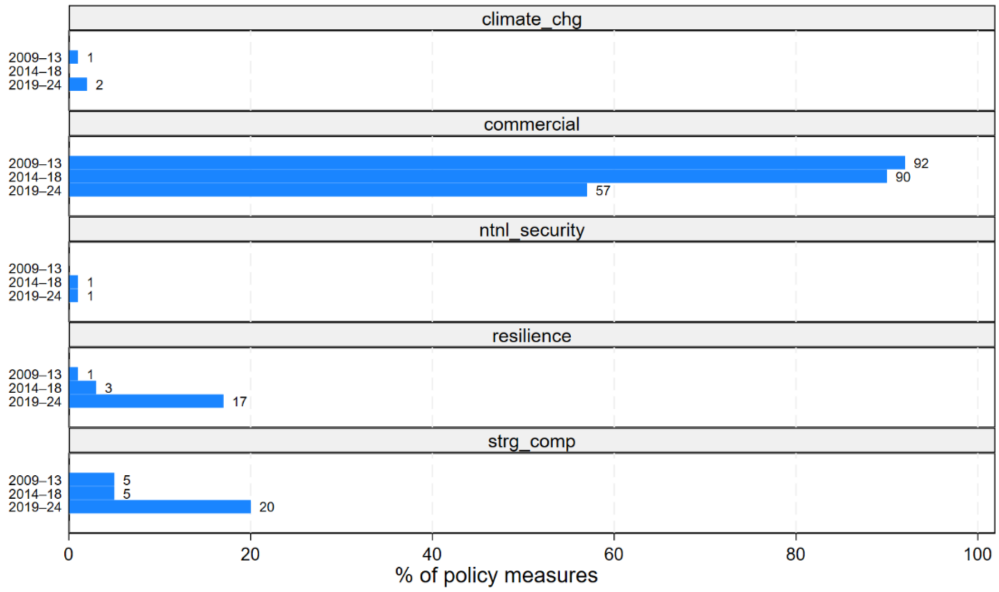



Source: GTA NIPO database.

[10] Among the countries in our sample, Türkiye has attracted most attention in the literature on industrialization strategies and industrial policy – see, e.g., Hale, Kutlay and Toksoz (2023). For discussions of industrial policy in the Arab economies in our sample, see e.g., Galal and El-Megharbel (2005), Cammett (2007), Achy (2013), Ait Ali and Msadfa (2016), El-Haddad (2016, 2017), Diwan, Malik and Atiyas (2019), Ghali and Nabli (2020) and Qanas and Sawyer (2025).

During this period the share of commercial policy interventions declined sharply, reflecting increases in policies motivated by strategic competitiveness and economic resilience (Figure 2). The primary motivation for intervention differs markedly across sectors (Figure 3). Measures are primarily framed around competitiveness, domestic production support, and industrial upgrading. Security and climate motives are limited, and resilience plays only a marginal role. In contrast, the cereals sector displays a distinct pattern, with resilience motivations considerably more prominent compared to other sectors. This indicates that agricultural policy is increasingly justified in terms of supply stability and vulnerability reduction rather than market expansion alone. The data thus reveal a bifurcated industrial policy regime: traditional, commercially driven interventions in manufacturing alongside resilience-oriented measures in food production.

**Figure 2. MENA trade and industrial policy measures by objective, 5-year periods (%)**




Source: GTA NIPO database.

Sectoral patterns of industrial policy adoption in our sample countries are reported in Figure 3. These are constructed by matching the HS6 product codes reported in the GTA database for NIPO measures (HS 2012 classification) to the corresponding ISIC3 sectors (using the WITS concordance).[11] Interventions are clustered around basic industries and the food sector. In metals, chemicals, and motor vehicles, policy is overwhelmingly commercially motivated. The sectoral focus of industrial policy has shifted across sectors over time, from heavy industry, particularly steel, towards chemicals and in the most recent period (2019–24), towards the food sector (crops and cereals). This shift coincides with global supply chain disruptions and food price volatility, suggesting that food security concerns have become structurally more salient. Thus, rather than exhibiting a steady upward expansion of industrial policy, interventions appear crisis-responsive, with sectoral priorities adjusting in response to external shocks.

[11] As mentioned, in the NIPO database an IP can affect multiple HS6 sectors. We treat each intervention-HS6 sector as a separate policy and restrict the sample to only those interventions that affected up to six HS6 sectors.

**Figure 3. Industrial policies in MENA countries, top 5 sectors (5-year periods, %)**

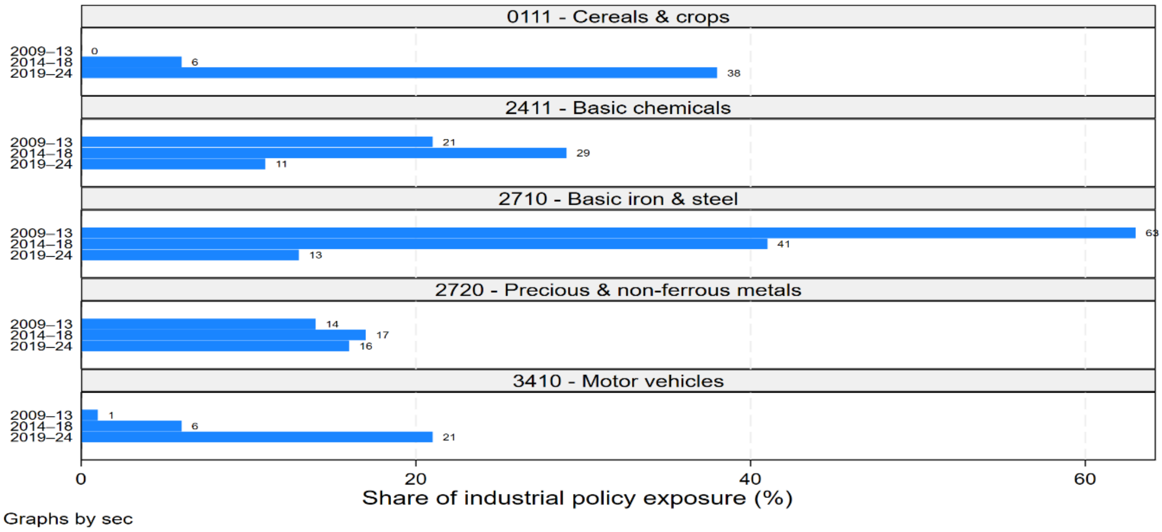
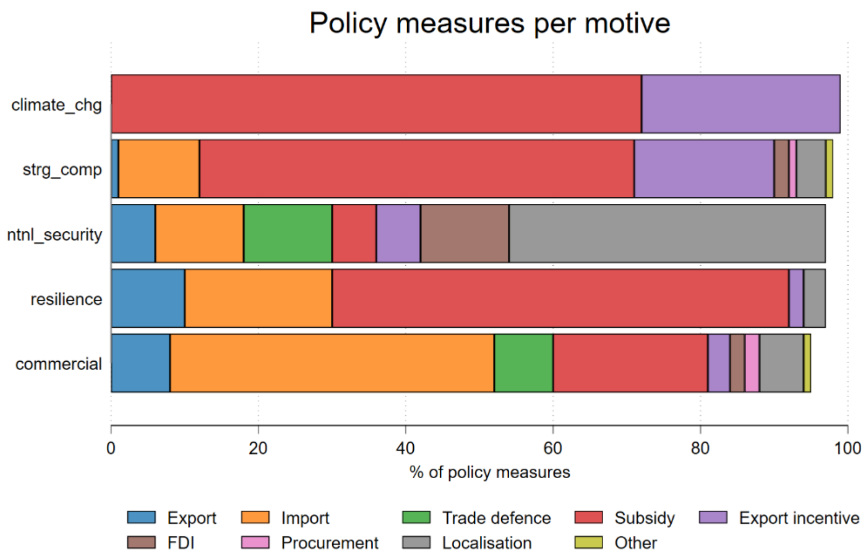



Figure 4 provides information on the mix of instruments used to pursue different policy objectives. Subsidies dominate in interventions motivated by climate change. This is also the case for policies motivated by strategic competitiveness objectives, complemented by import barriers and local content measures. Local content requirements dominate in interventions motivated by national security objectives, accounting for almost half of all measures. Economic resilience is mostly associated with subsidies, as well as a mix of export and import restrictions. Finally, measures that are driven by commercial considerations (support for domestic industry) most frequently involve the use of import restrictions, but also are pursued through subsidies, export restrictions and trade defense instruments (antidumping and countervailing duty actions).

**Figure 4. Instruments by policy objective, MENA countries, 2009-2024 (%)**




*Note*: Export and Import capture trade restrictive measures. Shares do not sum to 100 due to rounding.
*Source*: GTA NIPO database.

## 2. Network analysis of policy sequencing

We use the GTA NIPO dataset to construct motivation-specific policy "influence" networks to examine the relationship between policies adopted by major non-MENA economies and subsequent policy decisions by MENA countries. Our analysis focuses on directional relationships between ten large non-MENA economies (United States, China, Japan, India, United Kingdom, European Union, Brazil, Canada, South Korea, and Australia) and the nine MENA countries included in the GTA NIPO dataset. We analyze five distinct policy motivations, using the NIPO classification and mapping reported in Evenett et al. (2024) (national security, economic resilience, strategic competitiveness, climate change) and characterizing all other intervention as motivated by commercial consideration. As a necessary condition for inclusion of a policy in the GTA is that a measure affects trade (is trade-related), this last category captures 'traditional" motivations for trade intervention – supporting domestic industries against foreign competition.

### 2.1 Methodology

For each policy motivation *m*, we construct a directed network $G_m = (V, E_m, W_m)$ where *V* represents the set of countries that adopt policies with the same motivation within 6 months, $E_m$ represents directed edges, capturing potential influence relationships, and $W_m$ represents edge weights quantifying influence strength. We employ a temporal precedence approach to identify patterns of adoption of policies by MENA countries. For each MENA country *i* implementing an intervention of type ***d*** with motivation ***m*** at time ***τ***, we examine whether any of the ten G20 countries *j* put in place an intervention of the same type during a window of up to 6 months prior. For purposes of discussion and presenting results we will characterize the ten large non-MENA economies as potential "leaders" and the MENA countries as potential "followers", but it should be emphasized that this is simply a pattern in the temporal data and does not imply there is a causal follow-the-leader effect.

We define an influence event as:

$$I_{ijt}(\tau) = \{\ 1 \text{ if country } j \text{ implemented policy type } d \text{ in month } (\tau - k),\ k \in \{1,2,...,6\};\ 0 \text{ otherwise }\}$$

To illustrate how we assess bilateral influence patterns across intervention types, suppose Egypt implements a domestic subsidy for renewable energy (intervention type: domestic subsidies, motivated by Climate Change) in March 2020. We first examine whether country *i*, e.g., the USA, implemented domestic subsidies motivated by climate in the six months prior to March 2020 (October 2019 through February 2020) and identify temporal precedence.

For each MENA "follower" – non-MENA "leader" pair (*i,j*) under motivation *m*, we calculate the influence ratio $\rho_{ij}^m$ as:

$$\rho_{ij}^m = N_{ij}^m / N_j^m$$

where:

$N_{ij}^m$ = number of MENA country *i*'s interventions with motivation *m* that were preceded by leader *j*'s interventions of the same type within the six-month window; and

$N_i^m$ = total number of interventions by MENA country *i* with motivation *m.*

This ratio ranges from 0 (no temporal precedence) to 1 (all MENA interventions preceded by the leader). A directed edge ($j \rightarrow i$) with weight $w_{ij}^m = \rho_{ij}^m$ is added to network $G_m$ if $N_{ij}^m > 0$, indicating at least one instance of temporal precedence. The influence ratio accounts for differences in countries' policy activity levels by normalizing against each MENA country's total intervention count, enabling comparable measures across countries with varying implementation frequencies.[12]

We employ a multi-level analytical framework to characterize network structure, identify influential actors, and compare patterns across motivations. For each motivation-specific network $G_m$ we calculate structural properties and centrality metrics for each node to capture different dimensions of influence. The framework used is described in Appendix A. The analysis is implemented in Python using NetworkX for network construction and analysis (Hagberg et al., 2008), scikit-learn for clustering algorithms (Pedregosa et al., 2011), and Python-Louvain for community detection (Blondel et al. 2008). Network visualizations employ spring-force layout algorithms with edge weights proportional to influence ratios. Statistical significance is assessed at the $\alpha = 0.05$ level for correlation and stability measures.[13]

### 2.2 Network structures for different policy motivations

The network analysis of the relationship between policy adoption by MENA countries and those implemented in non-MENA states reveals substantial variation in leadership patterns across policy motivations.[14] The results are summarized in Table 1, which reports the rankings of each major non-MENA potential "leader" country in terms of their "influence" in each of the motivation networks.[15] The EU is the most influential actor, ranking first for three types of objectives – climate change, strategic competitiveness and economic resilience. The US is the "leader" for national security motivated interventions, while India is the most influential for measures that reflect 'traditional' trade policy objectives – supporting local industry. This pattern suggests large countries appear to influence policy adoption in MENA countries, but there is also evidence for domain-specific leadership rather than across-the-board policy influence.

The EU ranks first or second in four of the five motivation categories, with the exception being National Security where it ranks third. In contrast, other major economies exhibit motivation-specific influence patterns. Although ranking first in the network of National Security policies and second in the network of Strategic Competitiveness-motivated interventions, the US is less influential in the Climate Change network, ranking 5. India exhibits leadership in the network of policies without stated motivations (rank 1) and that for Economic Resilience (rank 2) but plays no role in the Climate Change policy

[12] To illustrate the approach, suppose the USA implemented a domestic subsidy for clean energy in January 2020 this creates a temporal precedence relationship: USA → Egypt for this specific intervention. We then repeat this process for all of Egypt's Climate Change interventions throughout the sample period. If Egypt implemented 50 Climate Change interventions in total, and 12 of these were preceded by USA interventions of the same type within the 6-month window the influence ratio is 0.24 (12/50), i.e., 24% of Egypt's climate motivated industrial policy interventions were temporally preceded by similar USA interventions. Since the influence ratio is greater than zero, we create a directed edge in the Climate Change network: USA → Egypt with weight 0.24. This edge represents the strength of USA's influence on Egypt's Climate Change policy decisions. This process is repeated for all leader-follower pairs across all five motivations, resulting in five separate influence networks that capture motivation-specific "influence" patterns.

[13] The network analysis provides a measure of the existence and extent of any temporal relationships between adoption of specific policy instruments motivated by the same industrial policy objective. We consider potential drivers, including policy learning/emulation and competitive spillovers in Section 3.

[14] Appendix Figure A1 displays the network structure for the five different motivations. The most influential countries are presented with a gold-colored node (the lightest shade if viewed in black and white).

[15] Appendix B reports results focusing on intra-MENA policy adoption patterns.

network (rank 10). This pattern may reflect India's focus on economic development priorities over environmental commitments. China maintains mid-tier rankings across most categories (ranks 4-9). Japan emerges as a notable actor in the National Security network, ranking second only to the USA.

**Table 1. Leader Country Rankings by Policy Motivation**

| Country | Climate change | Strategic competitiveness | National security | Commercial Policy | Economic resilience |
|---|---|---|---|---|---|
| European Union | 1 | 1 | 3 | 2 | 1 |
| United States | 5 | 2 | 1 | 3 | 6 |
| India | 10 | 5 | 9 | 1 | 2 |
| China | 4 | 7 | 7 | 4 | 9 |
| Japan | 6 | 3 | 2 | 10 | 5 |
| United Kingdom | 2 | 9 | 5 | 9 | 3 |
| Brazil | 3 | 6 | --- | 5 | 4 |
| South Korea | 9 | 4 | 6 | 8 | 7 |
| Canada | 8 | 8 | 4 | 7 | 10 |
| Australia | 7 | 10 | 8 | 6 | 8 |

***Notes***: Rankings based on weighted out-degree centrality (1 = highest influence), measuring total influence strength on MENA countries for each motivation category. A (—) indicates insufficient data for ranking.

Table 2 reports measures of network structure differences across policy motivations. The results reveal substantial variation in network size and participation across motivations. The Commercial Policy network exhibits the largest scale with 90 edges connecting 19 nodes, indicating widespread influence relationships for policies that are not associated with the specific industrial policy motivations defined by Evenett et al. (2024). As mentioned, the National Security network is very sparse, comprising only 19 edges among 13 nodes, with only four MENA "followers." This suggests there is limited policy diffusion of national security-related measures taken by G20 countries. Despite having the most connections, the Commercial Policy network achieves the highest density (0.263), indicating more complete connectivity among countries. The strategic competitiveness network has similar density (0.261). The Climate Change policy network, despite having moderate edge counts (54), has the lowest density (0.176), suggesting fragmented influence patterns.

**Table 2. Comparative analysis of motivation-specific influence networks**

| Motive | Nodes | Edges | Leaders | MENA Followers | Density | Avg Edge Weight | Modularity | Gini Coeff. | Top-3 | Top Leader |
|---|---|---|---|---|---|---|---|---|---|---|
| Commercial policy | 19 | 90 | 10 | 9 | **0.263** | 0.631 | 0.038 | 0.164 | 0.391 | India |
| Strategic comp. | 18 | 80 | 10 | 8 | 0.261 | 0.694 | 0.05 | **0.106** | 0.368 | EU |
| Economic Resilience | 18 | 69 | 10 | 8 | 0.225 | 0.636 | 0.091 | 0.216 | 0.422 | EU |
| Climate Change | 18 | 54 | 10 | 8 | 0.176 | **0.832** | 0.114 | 0.242 | 0.442 | EU |
| National Security | **13** | **19** | **9** | **4** | **0.122** | 0.682 | **0.208** | 0.335 | **0.542** | USA |

***Notes:*** Bold values indicate highest/lowest values in each column. Density ranges from 0 (no connections) to 1 (all possible connections realized). Average edge weight represents mean influence ratio.

Turning to influence strength and quality, average edge weights, representing mean influence ratios, show notable variation. Climate Change policies exhibit the highest average influence strength (0.832), suggesting that when climate influence occurs, it tends to be strong and persistent. National Security policies show similarly high influence strength (0.682), indicating that the limited security-motivated influence relationships that do exist are consequential. The network of Commercial Policy measures shows the weakest average influence (0.631), suggesting more diffuse, less concentrated influence patterns. Modularity scores indicate varying degrees of community structure and clustering across the networks. National Security policies exhibit the highest modularity (0.208), suggesting distinct subgroups within the network. This aligns with the observed small network size and selective participation patterns. Conversely, the Commercial Policy and Strategic Competitiveness policy networks have the lowest modularity (0.038 and 0.050, respectively), indicating relatively homogeneous influence structures without clearly defined subgroups. The absence of clustering coefficients (all zero) across networks reflects the bipartite nature of these leader-follower structures.

Gini coefficients reveal differential concentration of influence across motivations. Strategic competitiveness-motivated policies have the lowest Gini (0.106), suggesting relatively equally distributed leadership or influence among major economies. National Security and Climate Change motivated policies exhibit somewhat greater concentration (Gini = 0.335 and 0.242 respectively), consistent with specialized leadership in these domains. The Top 3 dominance metric confirms these patterns: in National Security networks, the three most influential countries account for 54.2% of total influence, compared to only 36.8% in the Strategic Competitiveness network.

The EU emerges as the dominant "leader" in four of the five policy motivation networks (Strategic Competitiveness, Economic Resilience, Climate Change, and Commercial Policy), with the United States the dominant leader in the National Security policy network. This suggests distinct spheres of influence: the EU leads in economic, environmental, and development-oriented policies, while the US has primacy in national security-related trade interventions. Finally, as mentioned, India emerges as influential in the Commercial Policy network.

Statistical tests of network structure variation are reported in Appendix Table A.2. Network density exhibits considerable heterogeneity across policy motivations, with a mean of 0.21 and standard deviation of 0.05, and range between 0.12 (National Security) to 0.26 (Commercial Policy), representing a more than two-fold difference in connectivity. The coefficient of variation (26%) indicates meaningful structural differences rather than random fluctuation. This variation suggests that policy motivations fundamentally shape the scope and breadth of international influence relationships. National Security interventions exhibit the highest influence concentration, with a Gini coefficient of 0.335 and a Herfindahl-Hirschman index (HHI) of 0.156.[16] The United States is the dominant leader in this domain, consistent with its role in the regional security architecture. HHI's are lower for other policy motivations. Strategic competitiveness-motivated policies show the most equitable influence distribution (Gini = 0.106, HHI = 0.104), suggesting that multiple major economies exert roughly comparable influence on MENA countries' competitiveness policies.

### 2.3 Sector-specific network analysis

To complement the motivation-based network analysis we conduct a sector-specific analysis to examine whether the patterns of policy influence between G20 economies and MENA countries vary across key industrial sectors. We focus on the five sectors discussed previously as the primary targets of industrial policy interventions in MENA countries: basic iron and steel (ISIC Rev.3 2710), cereals and

[16] The HHI value of 0.156 indicates "moderate concentration" in antitrust (between 0.15 and 0.25).

crops (ISIC 0111), basic chemicals (ISIC 2411), motor vehicles (ISIC 3410), and precious and non-ferrous metals (ISIC 2720).[17]

Sectoral influence networks are constructed using the same temporal precedence methodology as in Section 2, with a six-month look-back window, using sector-only matching: for each MENA intervention in a given sector at time τ, we check whether any G20 country implemented any policy intervention in the same sector within the prior six months, regardless of the specific instrument type used. Table 3 reports the rankings of each G20 economy in terms of their policy influence on MENA countries across the five sectors. The results reveal sectoral specialization in leadership, in contrast to the motivation-based analysis where the EU dominates across most categories. China emerges as the top leader in basic iron and steel, consistent with its dominant role in global steel production and trade policy activism. India leads in cereals and crops, reflecting its extensive agricultural policy interventions including export restrictions on food commodities. The United States ranks first in basic chemicals, while Brazil emerges as the top leader in both motor vehicles and precious and non-ferrous metals. Japan ranks in the middle tier across sectors (ranks 6-8), reflecting its comparatively lower volume of trade-distorting interventions recorded in the GTA database.

**Table 3. G20 to MENA Influence Networks by Sector**

| Country | Iron & Steel | Cereals & Crops | Basic Chemicals | Motor Vehicles | Precious Metals |
|---|---|---|---|---|---|
| China | 1 | 3 | 2 | 5 | 3 |
| USA | 2 | 4 | 1 | 2 | 4 |
| India | 3 | 1 | 3 | 3 | 2 |
| Brazil | 4 | 2 | 4 | 1 | 1 |
| EU | 5 | 5 | 6 | 7 | 6 |
| Japan | 6 | 6 | 8 | 8 | 7 |
| Canada | 7 | 8 | 5 | 4 | 5 |
| UK | 8 | 10 | 9 | 6 | 9 |
| Australia | 9 | 9 | 10 | 10 | 8 |
| Korea | 10 | 7 | 7 | 9 | 10 |

***Notes:*** Country rankings based on weighted out-degree centrality (1 = highest influence). Sector-only matching: any policy intervention in the same sector regardless of instrument type.

Table 4 and Figure 5 report comparative network statistics for the five sectors. Densities are relatively uniform, ranging from 0.234 (cereals and crops) to 0.263 (iron and steel), indicating that sector-only matching produces well-connected networks. This contrasts with the motivation-based analysis, where density varied more than two-fold (from 0.122 for national security to 0.263 for commercial policy). Basic chemicals exhibits the highest average edge weight (0.854), indicating that when influence links exist in this sector, they tend to be strong. Cereals and crops has the lowest average weight (0.657) alongside the highest modularity (0.072), suggesting more fragmented influence patterns with distinct sub-groups. This sector also displays the highest Gini coefficient (0.244) and top-3 dominance (0.452), indicating that influence is concentrated among a few leading countries,

[17] To assign GTA interventions to sectors, we map the HS 2012 product codes reported for each intervention to their corresponding ISIC Rev.3 sector using the WITS concordance. The HS chapter ranges for each sector are: HS 72 for basic iron and steel; HS 10 and 12 for cereals and crops (excluding HS 11, which maps to ISIC 1531 grain milling products rather than ISIC 0111 crop growing); HS 28 and 29 for basic chemicals (excluding HS 30-38, which correspond to distinct downstream ISIC sectors such as pharmaceuticals, fertilizers, and soap); HS 87 for motor vehicles; and HS 71 and 74-81 for precious and non-ferrous metals. An intervention is assigned to a sector if any of its listed HS codes falls within the relevant chapter range.

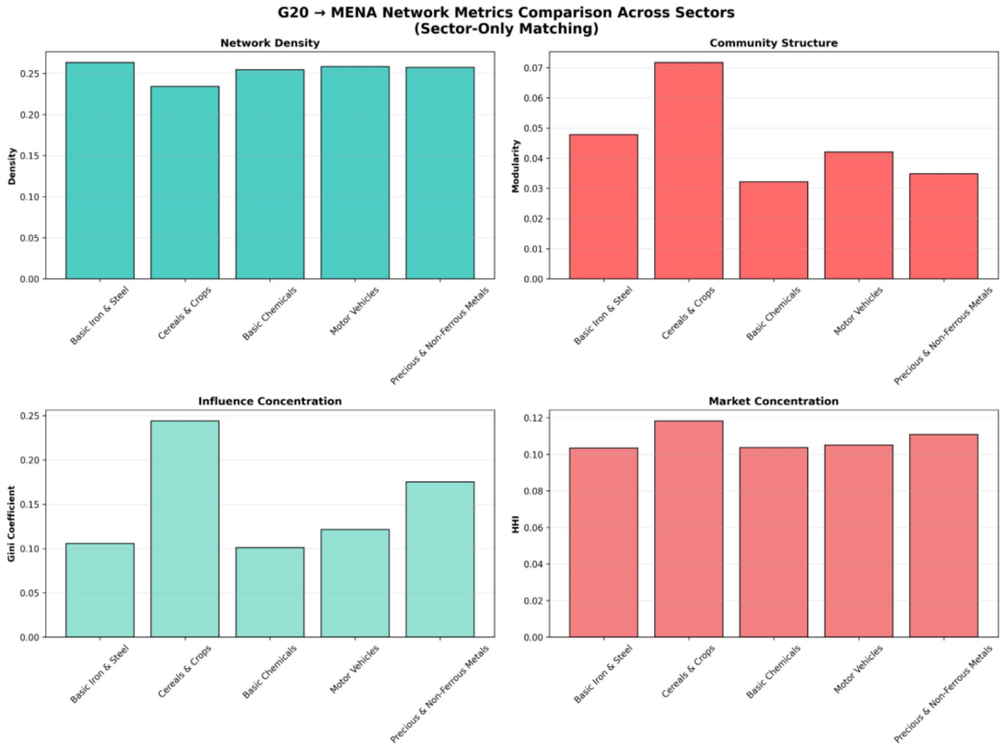
primarily India and Brazil. Iron and steel, chemicals and motor vehicles display low Gini coefficients (0.101–0.121) and low HHI values (0.103–0.105), indicating competitive influence structures, with multiple G20 economies exerting comparable influence on MENA countries. Across all sectors, HHI values remain below 0.15, indicating competitive rather than concentrated influence structures.

**Table 4. Comparative Analysis of Sector-Specific Influence Networks**

| Sector | Nodes | Edges | Density | Avg Weight | Modul. | Gini | HHI | Top-3 | Top Leader |
|---|---|---|---|---|---|---|---|---|---|
| Iron & Steel | 19 | 90 | 0.263 | 0.782 | 0.048 | 0.106 | 0.103 | 0.369 | China |
| Cereals & Crops | 19 | 80 | 0.234 | 0.657 | 0.072 | 0.244 | 0.118 | 0.452 | India |
| Basic Chemicals | 19 | 87 | 0.254 | 0.854 | 0.032 | 0.101 | 0.104 | 0.349 | Brazil |
| Motor Vehicles | 18 | 79 | 0.258 | 0.796 | 0.042 | 0.121 | 0.105 | 0.367 | Brazil |
| Precious Metals | 19 | 88 | 0.257 | 0.779 | 0.035 | 0.175 | 0.111 | 0.392 | Brazil |

***Notes:*** Bold values indicate highest/lowest in each column. Density ranges from 0 to 1. Avg Wt = average edge weight (mean influence ratio). Gini coefficient measures inequality in influence distribution. Top-3 = proportion of total influence held by the three most influential leaders. Sector-only matching.

**Figure 5. G20 to MENA Network Metrics Comparison Across Sectors**




### 3. Drivers of sequential policy adoption by type of motivation

In this section we explore the role of potential determinants of sequential policy adoption in MENA countries, distinguishing between policy instruments that discriminate against foreign firms and nondiscriminatory policies that support a given economic activity – production or consumption – without distinguishing between foreign and national companies. We do so because countries are more likely to respond to discriminatory measures, whereas nondiscriminatory measures may give rise to learning and emulation effects insofar as countries share the underlying goal that motivates intervention.[18] In the analysis we allow countries to adopt either discriminatory or non-discriminatory policies after the imposition of either type of measure by a partner country. Patterns of discriminatory measures adopted following a discriminatory measure implemented by a trading partner are more likely to reflect commercial considerations, including possible tit-for-tat responses, whereas the use of nondiscriminatory instruments is less likely to reflect such considerations.

Concretely, we focus on the probability of a MENA country *i* adopting an industrial policy (IP) with motivation *m* as a function of its exposure to a measure of type *m* that has been adopted by a trading partner, using all the observations in the GTA NIPO dataset.[19] In doing so, we hypothesize that this probability may depend on the intensity of the trade relationship with country *j* or, alternatively, depend on the extent to which *i* and *j* have similar 'values', reflected in measures of political alignment or membership of alliances or coalitions. In the analysis we employ a commonly used measure of political affinity – voting patterns in the UN General Assembly (UNGA).

As in the previous network analysis we use the GTA NIPO database of industrial policy events (2009–2024) with listed motivations. Policies are classified as discriminatory or nondiscriminatory, using information provided in the GTA that classifies measures accordingly. We merge these data with bilateral trade exposure (UN Comtrade, 2007 baseline) and political affinity (UNGA voting similarity, 0–1 scale).

We estimate the following two-way fixed effects regression model:

$$Y^{\boldsymbol{d}}_{imst} = \beta^{d}_{trade} Z^{dT}_{imst} + \beta^{d}_{pol} Z^{dP}_{imst} + \gamma' X_{ist} + \lambda_{ims} + \tau_t + \varepsilon^{d}_{imst} \quad (1)$$

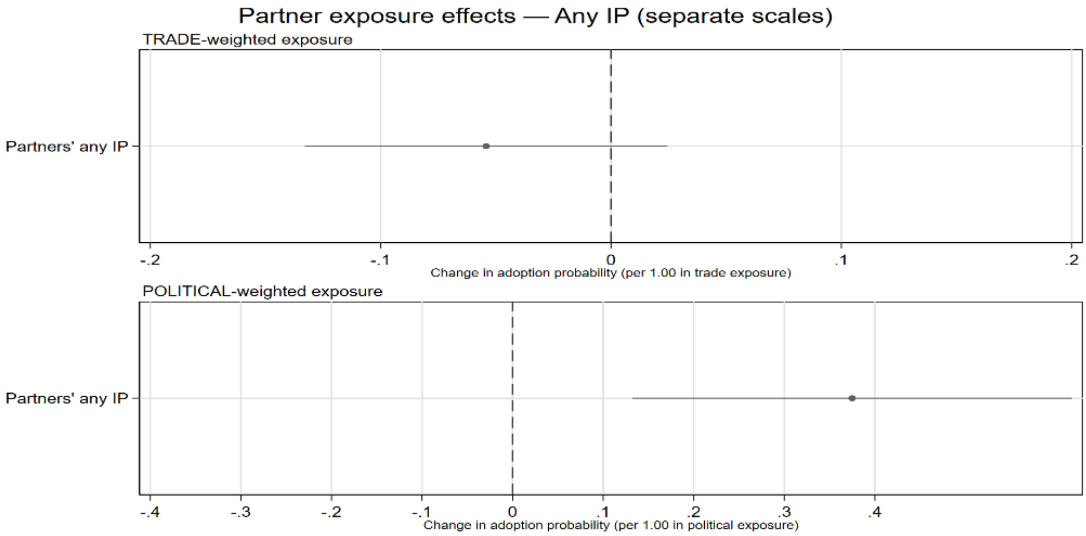
where the outcome variable of interest, $Y^{\boldsymbol{d}}_{imst}$ is the probability that an importing MENA country *i* adopts an industrial policy of type $\boldsymbol{d} \in$ {Any, Discriminatory, Nondiscriminatory} with listed motivation *m* in HS sector $\boldsymbol{s}$ and year $\boldsymbol{t}$. $Z^{dT}_{imst}$ and $Z^{dP}_{imst}$ measure how much country *i* is exposed to industrial policy ***d*** put in place by partner country *j* (where *j* spans all the countries in the GTA database), aggregating all partners' policies using either (i) trade (T) or (ii) political affinity (P) weights. These capture partner country importance, either measured by the trade share of *j* in sector *s*, or by the political alignment between *i* and *j*. $\beta^{d}_{trade}$ and $\beta^{d}_{pol}$ capture the percentage-point increase in the likelihood a country adopts industrial policy ***d*** when its partners adopt it. $X_{ist}$ are control variables (GDP per capita), $\lambda_{ims}$ and $\tau_t$ are importer × motivation × sector and time fixed effects, respectively, and $\varepsilon^{d}_{imst}$ is an error term.

Across all three types of policy ***d***, i.e., using either all interventions, only discriminatory or only non-discriminatory measures, the results suggest that industrial policy diffusion in MENA is shaped more by political alignment than by trade exposure, with the strength of the effect varying by policy type. Starting with all available observations on MENA trade and industrial policies captured in the GTA NIPO database, politically weighted exposure to a partner country intervention has a positive effect on adoption by *i*, while the effect of trade-weighted exposure is essentially zero. This indicates that industrial policy activism tends to be associated with political alignment between countries rather than their commercial ties (Figure 6).

[18] Industrial policies without motivation are treated as *commercial* type.

[19] In NIPO database a policy intervention can affect multiple HS6 sectors. We treat each intervention-HS6 sector as a separate policy and restrict the sample to only those interventions that affected up to 6 HS6 sectors.

**Figure 6. Adoption of any type of intervention (MENA countries, 2009-24)**




Figures 7 and 8 report results of estimating equation (1) for the set of discriminatory or non-discriminatory policies separately. Both for discriminatory and non-discriminatory policies, diffusion is driven by political alignment.

**Figure 7. Adoption of discriminatory policies (MENA countries, 2009-24)**

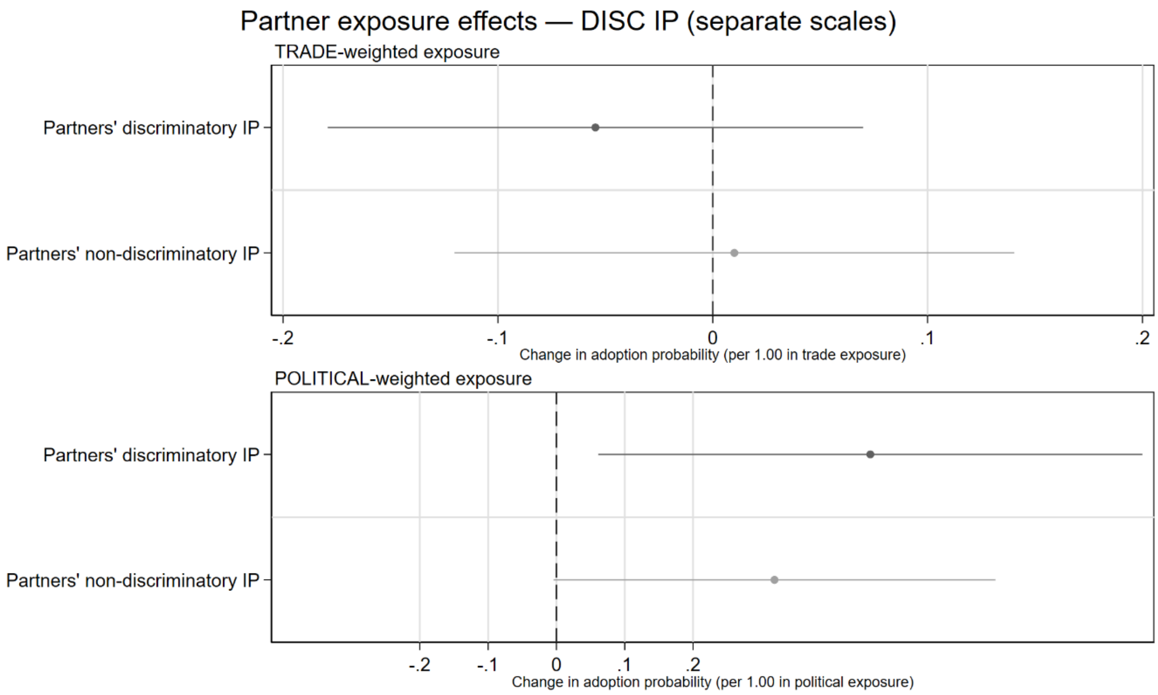
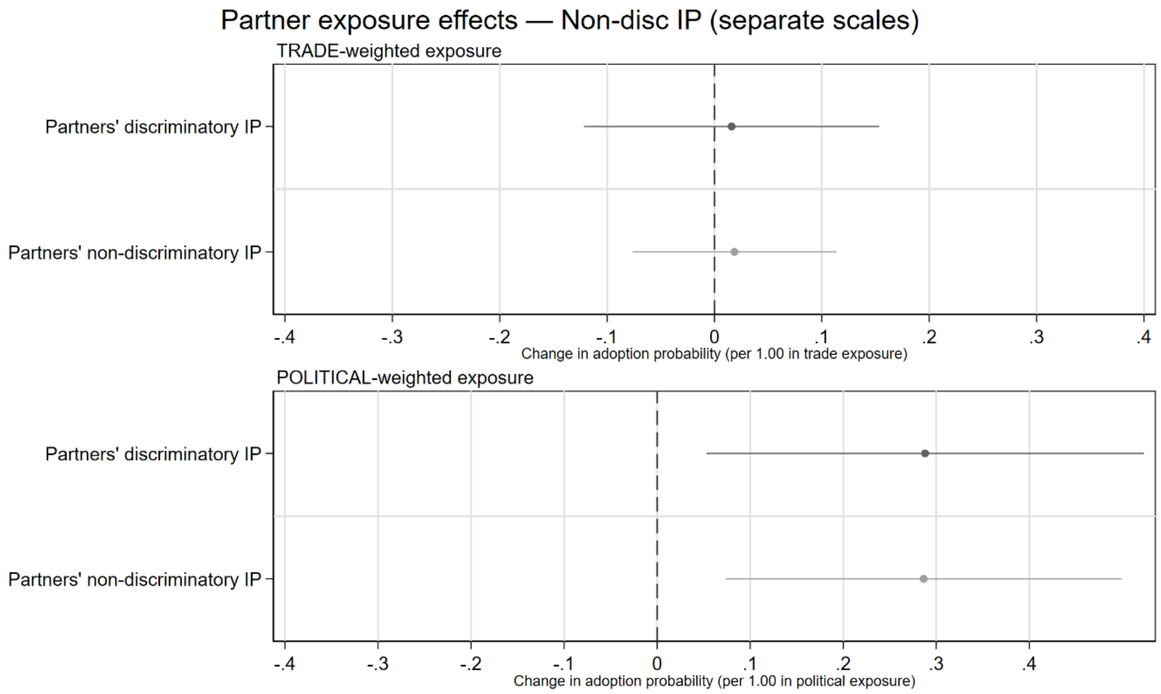


**Figure 8. Adoption of non-discriminatory policies (MENA countries, 2009-24)**

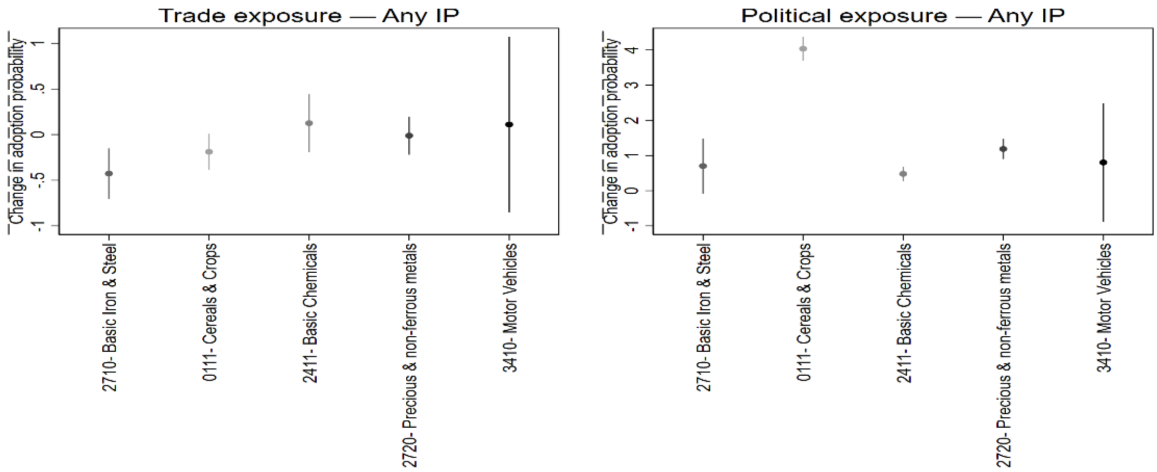



Overall, the results suggest industrial policy adoption may be driven to a greater extent by learning from (emulation of) policy behavior in politically aligned countries than bilateral trade relations. Evidence that policy adoption responds to partner countries' discriminatory policies driven by commercial motives is limited.

## 4. Drivers of sequential policy adoption: sectoral analysis

To evaluate how policy adoption takes place across the 5 key sectors identified in Section 2, we estimate an OLS regression as in Section 3 with a less conservative fixed effects structure, using only importer-motivation and year fixed effects. This adjustment is necessary to preserve within-sector variation, which allows us to estimate regressions within narrowly defined sectors. Looking first at any industrial policy measure, the sectoral OLS estimates for MENA countries again show that political exposure is the more systematic predictor of policy adoption (Figure 9). Political-weighted exposure is strongly positive in cereals and crops, also positive in precious and non-ferrous metals, and has moderate effects in basic iron and steel and chemicals. Trade-weighted exposure effects are generally small and imprecisely estimated across sectors, except for iron and steel and cereals and crops, where the coefficient is negative and precisely estimated. In these sectors, patterns are consistent with competitive reallocation, supply-chain repositioning, or strategic differentiation. Overall, the sectoral pattern of diffusion of policies in MENA appears more closely aligned with geopolitical linkages than with trade integration, particularly in agriculture related sectors.

**Figure 9. Diffusion of any type of policy by sector (MENA countries, 2009-24)**




For discriminatory policy instruments, areas of divergence become clearer (Figure 10). Trade exposure remains negative and statistically significant in basic iron and steel and cereals, while being positive in motor vehicles. This indicates that trade-connected sectors do not uniformly mimic protectionist measures; instead, responses vary by sector structure and competitive dynamics. Political exposure, meanwhile, exhibits a strong and statistically meaningful positive effect in cereals and crops and a positive effect in precious and non-ferrous metals. In agriculture especially, discriminatory policy appears closely aligned with geopolitical ties rather than trade competition.

Finally, for non-discriminatory industrial policy, trade exposure again shows negative and statistically significant effects in basic iron and steel and cereals, while estimates in other sectors are small and imprecise (Figure 11). Political exposure remains positive in cereals and modestly positive in chemicals and metals, although effects are generally weaker than for discriminatory policies. Taken together, these results suggest that in MENA, trade integration does not generate simple policy imitation; instead, greater exposure to trading partners' industrial policy may reduce the likelihood of adopting similar measures. In contrast, political alignment consistently increases the probability of industrial policy adoption, particularly in agriculture and resource-intensive industries.

Taken together, the sectoral evidence both reinforces and nuances the pooled results presented in Section 3. Consistent with the aggregate findings, political exposure remains a robust and positive predictor of industrial policy adoption, particularly in cereals and crops and in resource-intensive metals. This confirms that geopolitical alignment is a central channel of policy diffusion in the MENA region. At the same time, the weak or insignificant trade coefficient in the pooled sample thus reflects offsetting sector-specific dynamics rather than the absence of trade-related mechanisms.

**Figure 10. Diffusion of discriminatory interventions by sector (MENA countries, 2009-24)**

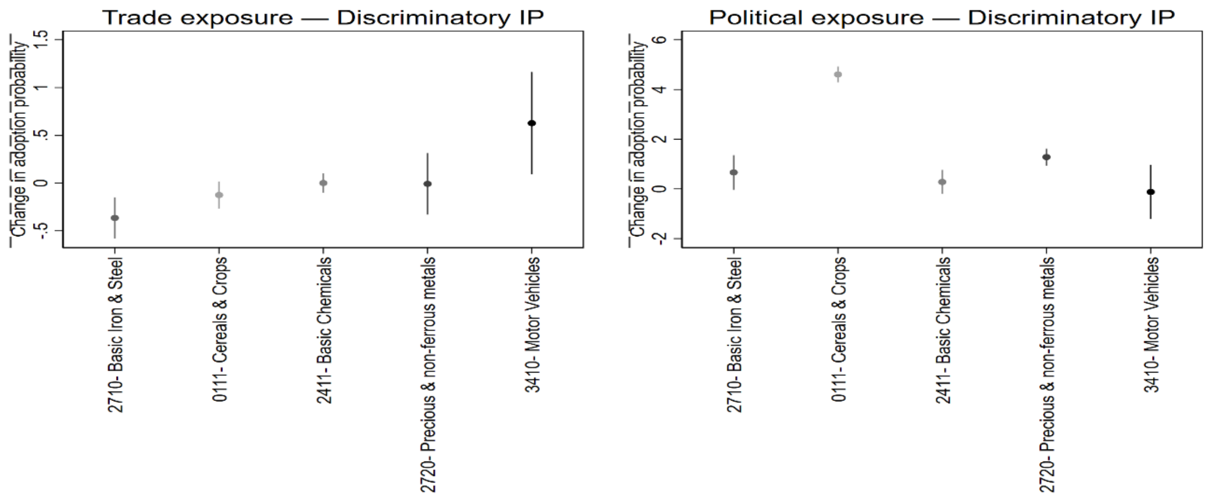
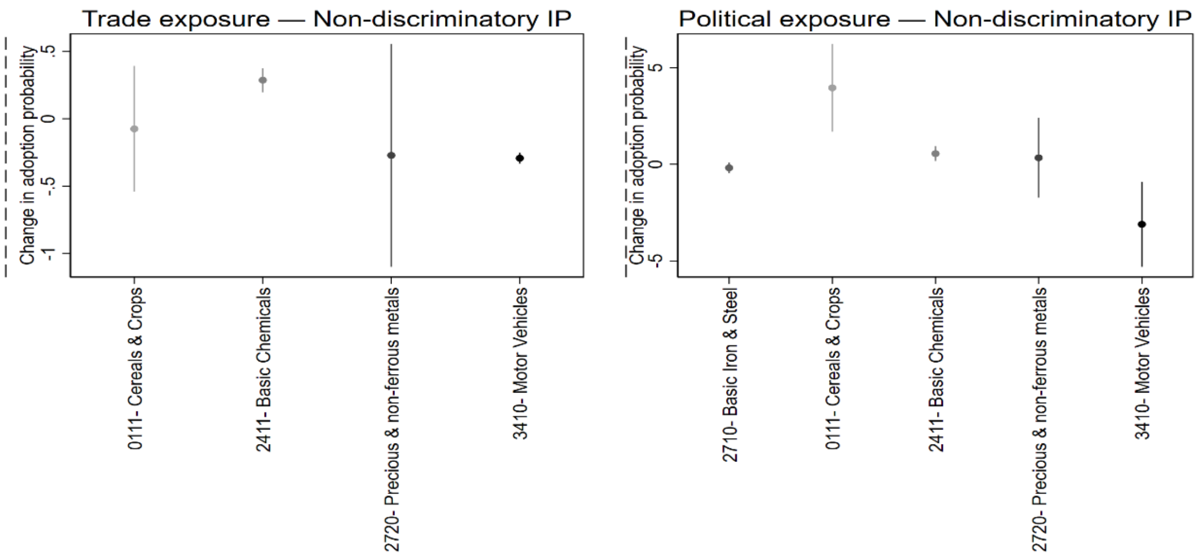



**Figure 11. Diffusion of non-discriminatory policy by sector (MENA countries, 2009-24)**




## 5. Implications for potential participation in plurilateral agreements

The global resurgence in industrial policy has many drivers, including geopolitical rivalry, efforts by states to bolster national competitiveness and strengthen policy autonomy, and the use of trade as a tool to achieve non-trade objectives such as combating climate change (Evenett et al. 2024; Hoekman, Tas and Ticku, 2025). In response, countries can either seek to offset the negative effects of foreign policies by adopting similar measures, pursue accommodation or 'mutual disarmament' through international negotiations and/or cooperate with like-minded countries to pursue shared policy objectives through concerted action. Insofar as countries have similar motivations for intervening in the economy that do not necessarily require the use of discriminatory measures and where joint action enhances the effectiveness or reduces the cost of interventions, plurilateral agreements may offer a coordination mechanism for groups of countries to adopt similar policies to pursue shared goals. Agreements to govern the use of discriminatory policy instruments that are zero or negative sum may also be possible, as pursuit by many countries of such policies will reduce their effectiveness and increase their costs, creating incentives to explore mutual disarmament.

In principle, negotiations to coordinate or cooperate on the use of industrial policies to balance the pursuit of underlying objectives against competitive (trade) spillovers should occur in the WTO. This organization was established to provide a forum for states to settle trade disputes and agree to reduce the trade-distorting effects of national policies. The WTO has not been able to serve this purpose because of substantive policy disagreements among its major members and its working practice of consensus decision-making. An implication is that efforts to facilitate trade and deepen economic relations among like-minded countries must be pursued through plurilateral initiatives. The main path used by the EU and many Asia-Pacific nations to do so is to conclude or to deepen trade agreements. More and deeper PTAs have also been a response to US unilateralism and its rejection of the liberal rules-based international order. The PTA path is not one that most MENA countries have favored as a means to deepen integration into the global economy. The track record with PTAs in the region suggests the prospects for change in this regard are limited. Issue-specific variable-geometry approaches to governing trade relations with like-minded countries is more likely to be preferred by MENA governments. Relative to deep PTAs, participation in OPAs may not only be more feasible but appropriate given heterogeneity in national contexts, preferences, and concerns.

Different sets of Arab countries have joined the plurilateral issue-specific negotiations in the WTO context. Negotiations on an Investment Facilitation for Development agreement were concluded in 2023 and attracted participation by the GCC countries, Egypt, Morocco and Yemen. However, the last three countries did not join the plurilateral negotiations on e-commerce. This illustrates the flexible nature of OPAs, permitting modularity in membership. Arab countries have shown interest in plurilateral cooperation. The India–Middle East–Europe Economic Corridor, a plurilateral effort involving India, EU, US and the UAE and Saudi Arabia is a concrete example of a plurilateral initiative to improve connectivity and trade corridors to link the Gulf to Europe on the one hand and India on the other.[20] Another example of potential interest in plurilateral cooperation is UAE leadership as a founding member of the 2025 Future of Investment and Trade Partnership.[21]

While there may be interest by MENA countries to go down the OPA track, agreements and initiatives to date do not encompass industrial policies. Potential OPAs dealing with trade and climate, critical materials partnerships or supply chain resilience are likely to address industrial policy instruments. The results of our analysis of the motivations for policy intervention and the patterns of timing of adoption of industrial policies in MENA countries suggest that there may be limited prospects for participation in plurilateral initiatives governing the use of industrial policies for some of the OPA topics that have been suggested by major G20 economies. Insofar as a commonality of purpose motivating intervention can provide a basis for cooperation, the very limited degree to which policy interventions are motivated by climate change suggests that MENA countries' policy priorities are not aligned with those of the major neighboring bloc – the EU – and other high-income OECD member countries. This suggests MENA countries are unlikely to become members of a trade-climate club.

[20] See Baabood (2024) and Khan et al. (2025).

[21] The FITP adopts a work stream-based approach to identifying opportunities for cooperation among like-minded countries on trade-related topics of mutual interest.

Greater prospects may exist for participation in plurilateral initiatives that seek to collectively bolster economic resilience, given the pattern of possible emulation or diffusion of policies in this domain. Most policies by MENA countries are motivated by commercial and competitiveness-related objectives, often using discriminatory instruments. Consequently, international cooperation is likely to be driven by the potential benefits of internalization of negative policy spillover effects

More generally, our findings suggest that cooperation may depend on whether the non-MENA countries that are most influential for each of the different industrial policy objectives participate in plurilateral initiatives. While the EU is influential across all industrial policy motivations, other countries matter as well for specific types of interventions. Noteworthy here is the potential importance of India as a leader on (non-strategic) commercial policy and the role of the United States in the national security policy network. Finally, our analysis of potential drivers of policy adoption in MENA countries suggests that political alignment between country pairs matters more as a determinant of policy emulation than bilateral trade intensity. Thus, the scope for plurilateral cooperation may be determined more by political alignment than by commercial factors.

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## Appendix A. Network Analysis Framework

We employ a multi-level analytical framework to characterize network structure, identify influential actors, and compare patterns across motivations. For each motivation-specific network $G_m$ we calculate five structural properties as well as four centrality metrics for each node to capture different dimensions of influence:

### *Global Network Properties*

1. *Network Density*: The proportion of realized connections among all possible directed connections:

   $\delta_m = |E_m| / (|V_{\text{leaders}}| \times |V_{\text{MENA}}|)$, where $|V_{\text{leaders}}| = 10$ and $|V_{\text{MENA}}|$ varies by data availability.

2. *Clustering Coefficient*: Measured using the transitivity of the undirected projection $G_m^u$:

   $C_m = (3 \times \text{number of triangles in } G_m^u) / (\text{number of connected triples in } G_m^u)$

3. *Modularity*: Community structure quality using the Louvain algorithm on weighted undirected projections:

   $Q_m = (1/2W) \Sigma_{ij} [w_{ij} - (k_i k_j/2W)] \delta(c_i, c_j)$, where $W = \Sigma_{ij} w_{ij}$, $k_i$ is the weighted degree of node $i$, $c_i$ is the community assignment, and $\delta(c_i, c_j) = 1$ if nodes share a community.

4. *Degree assortativity*: coefficient measuring homophily in weighted undirected networks:

   $$r_m = [\Sigma_{ij} w_{ij}(k_i - \bar{k})(k_j - \bar{k})] / [\Sigma_{ij} w_{ij}\sqrt{((k_i - \bar{k})^2(k_j - \bar{k})^2)}]$$

5. *Reciprocity*: The proportion of reciprocated directed edges in $G_m$.

### *Node-Level Centrality Measures*

- *Weighted Out-Degree* (for large non-MENA economies): Sum of outgoing edge weights $s_i^{\text{out}} = \Sigma_{j \in \text{VMENA}} w_{ij}^m$
- *Weighted In-Degree* (for MENA countries): Sum of incoming edge weights $s_j^{\text{in}} = \Sigma_{i \in \text{Vleaders}} w_{ij}^m$
- *PageRank:* Recursive importance measure accounting for network structure: $PR(i) = (1-d) + d\, \Sigma_{j \in pred(i)} [(w_{ji} \cdot PR(j)) / \Sigma_k w_{jk}]$, where $d = 0.85$ is the damping factor and pred($i$) denotes nodes with edges to $i$.
- *HITS Algorithm*: Computes hub scores (for non-MENA countries) and authority scores (for MENA countries) through iterative updates, normalized after each iteration until convergence: $h_i = \Sigma_j w_{ij} a_j$, $a_j = \Sigma_i w_{ij} h_i$

In addition to these structural network properties, we assess differences in leadership influence using three complementary measures, the Gini coefficient, the Herfindahl-Hirschman index and the share of the three most influential "leader" countries.[1] We also employ two complementary approaches to identify clusters in influence patterns. The first is the Louvain Community Detection measure (De Meo

[1] The Gini coefficient measures inequality in the distribution of weighted out-degrees among leaders: $G_m = [2 \Sigma_{i=1}^n i \cdot s_i^{(sorted)}] / [n \Sigma_{i=1}^n s_i^{(sorted)}] - (n+1)/n$, where $s_i^{(sorted)}$ denotes leaders' influence strengths in ascending order. The Herfindahl-Hirschman Index (HHI) is a measure of influence concentration: $HHI_m = \Sigma_{i=1}^n (s_i^{out} / \Sigma_i s_i^{out})^2$, where values below 0.15 indicates competitive influence structures, while values above 0.25 indicate high concentration. The share of the three most influential leaders is calculated as $D_m^{top3} = (\Sigma_{i \in Top3} s_i^{out}) / (\Sigma_{i \in Vleaders} s_i^{out})$.

et al. 2011), which we apply to weighted undirected projections of $G_m$ to identify communities that maximize modularity $Q_m$. The second is K-means clustering (Hartigan and Wong, 1979) of the MENA countries, where we construct an influence feature matrix $X_m$ where rows represent MENA countries and columns represent leaders, with entries $X_{ji}^m = \rho_{ij}^m$. We apply the K-means clustering with $k$=3 clusters, chosen based on the elbow method and silhouette score analysis: $\min_C \Sigma_{c=1}^k \Sigma_{j\in C_c} ||X_j - \mu_c||^2$ where $\mu_c$ is the centroid of cluster $c$.[2]

Finally, to assess the stability of influence patterns across motivations, for each pair of motivations ($m_1$, $m_2$), we calculate the Spearman rank correlation coefficient between leaders' influence rankings:

$$\rho_s(m_1, m_2) = 1 - [6\ \Sigma_i\ d_i^2] / [n(n^2-1)]$$

where $d_i$ is the rank difference for leader $i$ between two motivations. For MENA countries appearing in both motivation networks, we use the adjusted Rand index (ARI) to measure the pair-wise similarity between the two networks:[3]

$$ARI(m_1, m_2) = [\Sigma_{ij}\ C(n_{ij},2) - [\Sigma_i\ C(a_i,2)\ \Sigma_j\ C(b_j,2)] / C(n,2)] / \{½[\Sigma_i\ C(a_i,2) + \Sigma_j\ C(b_j,2)] - [\Sigma_i\ C(a_i,2)\ \Sigma_j\ C(b_j,2)] / C(n,2)\}$$

where $n_{ij}$ represents the number of country pairs in the same cluster under both partitions, $a_i$, $b_j$ are cluster sizes, and C($n$,2) denotes the binomial coefficient.

**Appendix Table A.1: MENA Trade Policy Interventions by Country**

***Distribution of industrial policy interventions across MENA countries (2009-2024)***

| Country | Number of Interventions | % of Total |
|---|---|---|
| Türkiye | 550 | 47.4% |
| Saudi Arabia | 269 | 23.2% |
| Egypt | 122 | 10.5% |
| Morocco | 70 | 6.0% |
| Algeria | 44 | 3.8% |
| Tunisia | 34 | 2.9% |
| United Arab Emirates | 32 | 2.8% |
| Israel | 27 | 2.3% |
| Qatar | 12 | 1.0% |
| TOTAL | 1,160 | 100.0% |

[2] These are techniques to find the optimal number of clusters (K) in K-Means clustering, focusing on cluster cohesion (tightness within clusters) and separation (distance between clusters). See e.g., https://builtin.com/data-science/elbow-method.

[3] The ARI corrects the standard Rand Index for random chance agreement, and ranges between -1 (no alignment or overlap) to 1 (perfect overlap), with 0 indicating random similarity. See e.g., Warrens an Van Der Hoef (2022).

**Appendix Table A.2 Statistical Tests of Network Structure Variation**

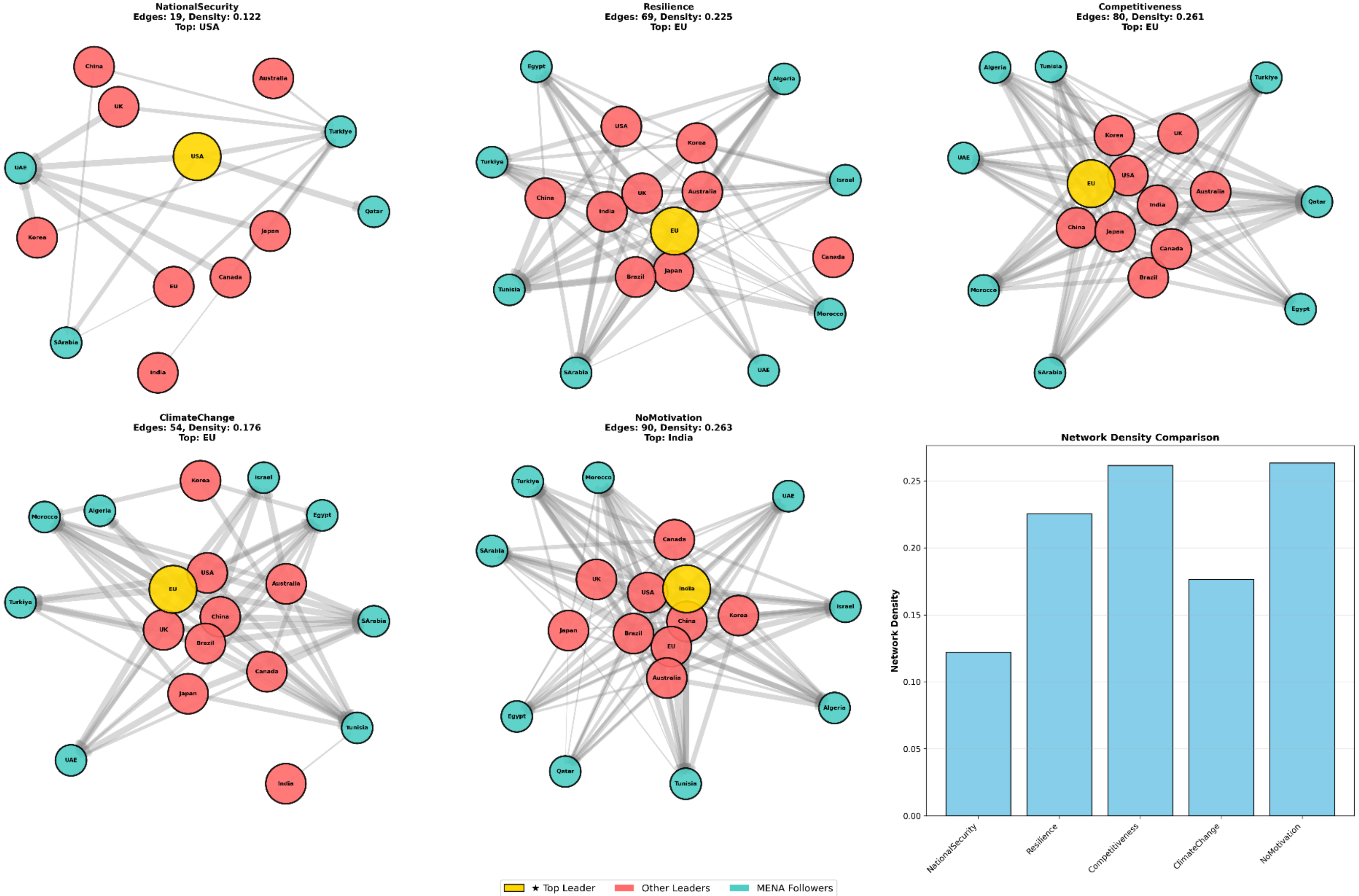
*Cross-motivation comparisons and concentration measures*

| Statistical Test | Results |
| --- | --- |
| **Network Density Variation** | Mean density across motivations: 0.210<br>Standard deviation: 0.054<br>Range: 0.122 (National Security) to 0.263 (Commercial Policy) |
| **Correlation: Gini Coefficient and HHI** | Pearson correlation: $r = 0.944$<br>p-value: 0.016 (significant at $\alpha = 0.05$)<br>Interpretation: Strong positive association between concentration measures, statistically significant |
| **Highest Influence Concentration** | **Motivation: National Security**<br>Top Leader: United States<br>Gini Coefficient: 0.335 (moderate-high inequality)<br>HHI: 0.156 (moderate concentration) |
| **Lowest Influence Concentration** | **Motivation: Competitiveness**<br>Top Leader: European Union<br>Gini Coefficient: 0.106 (low inequality)<br>HHI: 0.104 (competitive market structure) |

***Notes:*** Gini coefficient ranges from 0 (perfect equality) to 1 (perfect inequality). HHI < 0.15 indicates competitive structure; > 0.25 indicates high concentration. Statistical significance assessed at $\alpha = 0.05$ level.

## Appendix Figure A1

**Trade Policy Influence Networks by Motivation**




***Note***: No Motivation is denoted by Commercial Policy measures in the body of the paper.

## Appendix B. "Leader-follower" relationships between MENA countries

This Appendix examines the pattern of policy relationships to determine whether there are leader-follower patterns within MENA in the adoption of policies. We examine 1,160 trade policy interventions implemented by MENA countries over the study period (Table B.1). Most measures are Commercial Policy interventions, i.e., not associated with one of the specific industrial policy motivations defined by Evenett et al. (2024).

**Table B.1: Within MENA Descriptive Statistics**

| Policy Motivation | 2009-2014 | 2015-2019 | 2020-2024 | Total |
|---|---|---|---|---|
| National Security | 0 | 6 | 10 | 16 |
| Resilience | 3 | 12 | 125 | 140 |
| Competitiveness | 11 | 30 | 133 | 174 |
| Climate Change | 3 | 1 | 14 | 18 |
| Commercial policy | 245 | 267 | 355 | 867 |
| **TOTAL** | **262** | **316** | **637** | **1,215** |

***Notes:*** Some interventions are classified under multiple motivations, causing the sum of motivation counts (1,215) to exceed the total number of unique interventions (1,160). Of the 55 multi-motivation interventions, 51 combine Economic Resilience and Strategic Competitiveness objectives.

The intra-MENA network analysis reveals substantial heterogeneity in regional leadership patterns across policy motivations, with leadership roles varying significantly depending on the type of intervention (Table B.2).

**Table B.2: Intra-MENA Regional Leadership Rankings by Policy Motivation**

| Country | Climate Change | Competitiveness | Commercial Policy | Resilience | National Security |
|---|---|---|---|---|---|
| Algeria | --- | 6 | 6 | 3 | --- |
| Egypt | --- | 5 | 3 | 4 | --- |
| Israel | --- | --- | 5 | 2 | --- |
| Morocco | 1 | 2 | 2 | 6 | --- |
| Qatar | --- | --- | 9 | --- | --- |
| Saudi Arabia | --- | 4 | 4 | 5 | --- |
| Tunisia | --- | 7 | 8 | 7 | --- |
| Turkiye | --- | 1 | 1 | 1 | --- |
| UAE | --- | 3 | 7 | 8 | 1 |

***Notes:*** Rankings based on weighted out-degree centrality within intra-MENA influence networks.

Türkiye emerges as the dominant regional leader, ranking first in Competitiveness, Commercial Policy, and Economic Resilience categories. Morocco ranks first in Climate Change while maintaining a top two position in Commercial Policy and Competitiveness. The UAE is ranked first for National Security-motivated interventions, while Israel ranks second in Economic Resilience-motivated policies. Egypt consistently ranks in a top three position in the Commercial Policy category. The prevalence of missing values indicates that regional leadership is highly policy motivation-specific, with different MENA countries exercising influence in distinct policy domains rather than exhibiting consistent leadership across all areas.

The intra-MENA network analysis reveals differences in regional cluster patterns across policy motivations (Table B.3). The Commercial Policy network exhibits the highest density (0.958) and reciprocity (0.957), indicating nearly complete interconnection and strong bidirectional influence among MENA countries for non-strategic interventions, with Türkiye as the regional leader. Strategic competitiveness-driven interventions also show high density (0.661) and reciprocity (0.919), led by Türkiye, suggesting a pattern of regional diffusion of economic policies. In contrast, Economic Resilience interventions display moderate density (0.571) and lower reciprocity (0.563), indicating more hierarchical rather than reciprocal influence patterns. The Climate Change network is very sparse with minimal connections, while National Security shows only limited regional patterns with UAE as the sole influential actor. Influence concentration (measured by Gini coefficient) is moderate across active networks (0.35-0.41), suggesting that regional leadership is distributed rather than dominated by single actors, though top three countries still capture 61-70% of total influence.

**Table B.3: Intra-MENA Network Characteristics by Policy Motivation**

| Motivation | Network Size | Density | Reciprocity | Gini | Top 3 Share (%) | Regional Leader |
|---|---|---|---|---|---|---|
| Commercial Policy | 9 nodes, 69 edges | 0.96 | 0.96 | 0.35 | 60.7 | Türkiye |
| Strategic competitiveness | 8 nodes, 37 edges | 0.66 | 0.92 | 0.35 | 68.1 | Türkiye |
| Economic Resilience | 8 nodes, 32 edges | 0.57 | 0.56 | 0.41 | 69.6 | Türkiye |
| Climate Change | 2 nodes, 1 edge | 0.5 | 0 | 0 | 100 | Morocco |
| National Security | 2 nodes, 1 edge | 0.5 | 0 | 0 | 100 | UAE |

***Notes:*** Network size shows number of MENA countries with influence relationships and total edges. Density ranges from 0 (no connections) to 1 (all possible connections). Reciprocity measures bidirectional influence (0 = unidirectional, 1 = fully reciprocal). Gini coefficient measures inequality in influence distribution. Top 3 Share shows proportion of total influence held by three most influential countries.

### 5.1 Intra-MENA Influence Networks by Sector

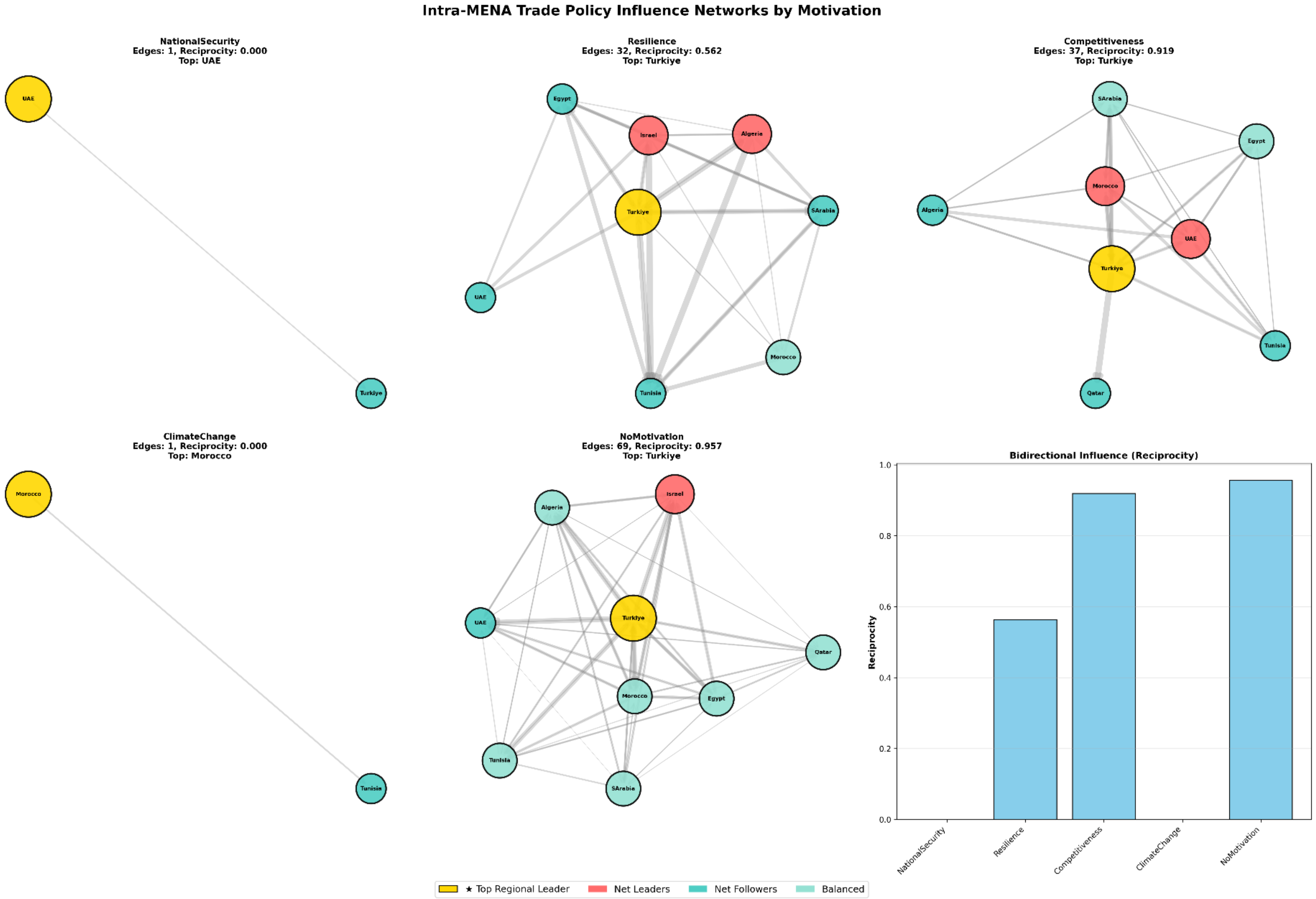
Table B.4 reports the characteristics of intra-MENA influence networks by sector. The most striking finding is that Türkiye emerges as the dominant regional leader across all five sectors, in contrast to the G20-to-MENA analysis where leadership is distributed among different countries. This underscores Türkiye's central role as a policy hub within the MENA region, consistent with its accounting for 47.4 percent of all MENA interventions in the GTA database. Network characteristics vary meaningfully across sectors. Iron and steel display the highest density (0.792) and clustering (0.920), indicating near-complete interconnection among MENA countries in steel policy. Motor vehicles also show high density (0.732) and the highest reciprocity (0.829), suggesting strong bidirectional influence patterns in automotive policy. Cereals and crops have more limited regional connectivity (density 0.597, 43 edges) but maintains relatively high reciprocity (0.791). Basic chemicals stands out with the highest modularity (0.226) and the most concentrated influence structure (Gini = 0.617, HHI = 0.277, top-3 share = 79.7 percent). This indicates that chemical sector policy influence within MENA is structured around distinct sub-groups with a small number of countries dominating. Across all sectors, concentration is substantially higher within MENA (Gini 0.41–0.62) than in the G20-to-MENA networks (Gini 0.10–0.24), confirming that regional influence is more hierarchical than the broader international influence structure.

**Table B.4. Intra-MENA Network Characteristics by Sector**

| Sector | Network | Dens. | Clust. | Mod. | Recip. | Gini | HHI | Top-3 | Leader |
|---|---|---|---|---|---|---|---|---|---|
| Iron & Steel | 9n, 57e | 0.792 | 0.920 | 0.128 | 0.842 | 0.419 | 0.184 | 0.650 | Türkiye |
| Cereals & Crops | 9n, 43e | 0.597 | 0.756 | 0.050 | 0.791 | 0.438 | 0.182 | 0.631 | Türkiye |
| Chemicals | 9n, 39e | 0.542 | 0.744 | 0.226 | 0.769 | 0.617 | 0.277 | 0.797 | Türkiye |
| Motor Vehicles | 8n, 41e | 0.732 | 0.864 | 0.057 | 0.829 | 0.411 | 0.194 | 0.650 | Türkiye |
| Precious Metals | 9n, 54e | 0.750 | 0.884 | 0.116 | 0.852 | 0.471 | 0.195 | 0.704 | Türkiye |

***Notes:*** Network = nodes and edges. Dens. = density. Clust. = clustering coefficient. Mod. = modularity. Recip. = reciprocity. Gini and HHI measure influence concentration. Top-3 = share of influence held by top three countries. Sector-only matching.

## Appendix Figure B1




***Note***: No Motivation is denoted by Commercial Policy measures in the body of the paper.